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MANUAL ESTIMATION OF FALLOUT CASUALTIES.(U)

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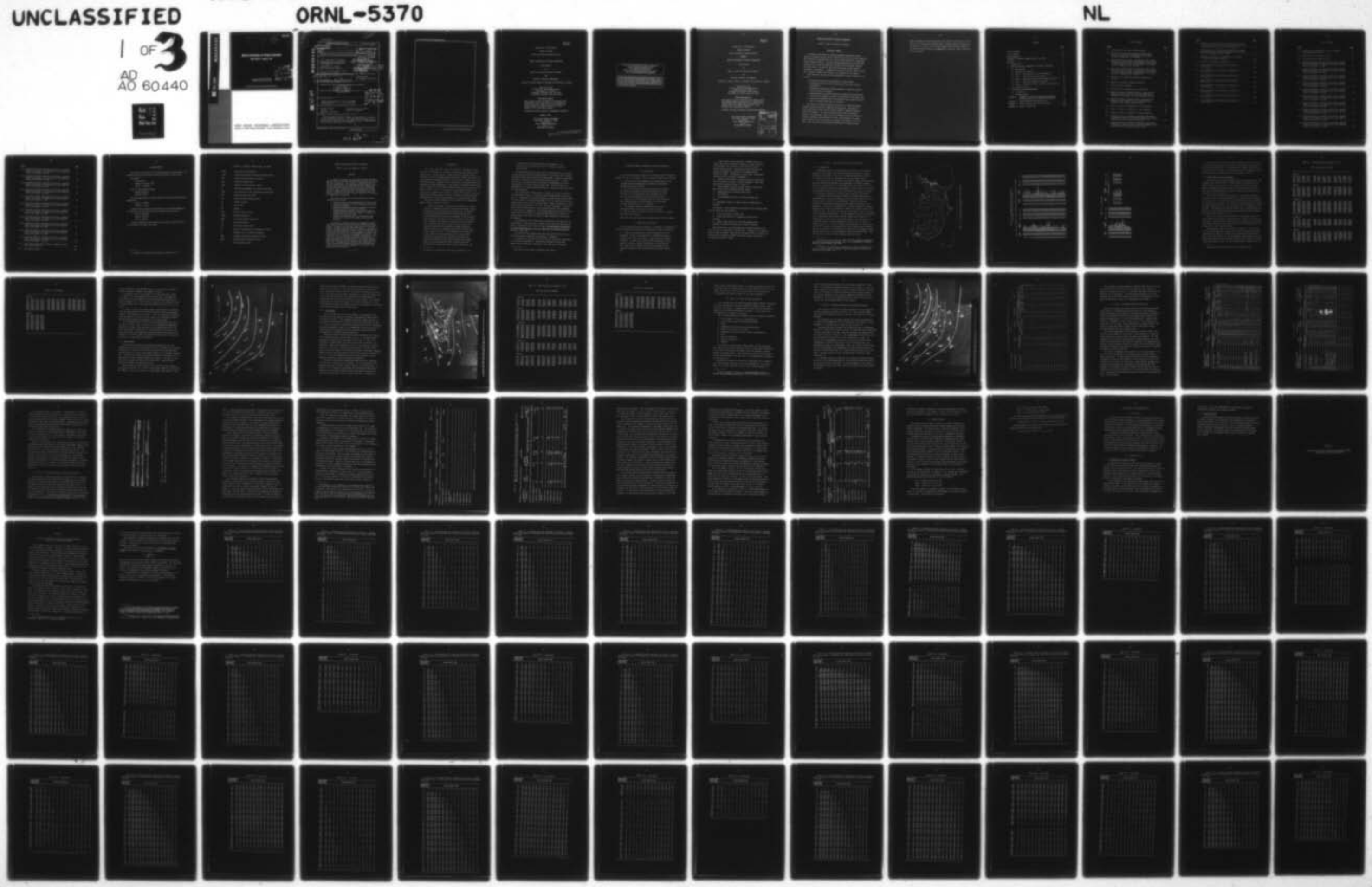

OF 3

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ORNL-5370

Manual Estimation of Fallout Casualties

FINAL REPORT • AUGUST 1978

Interagency Agreement DOE 40-600-76
and DCPA01-76-C-0373, Work Unit 3539A

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A non-computer method is given for estimating U.S. nuclear fallout casualties by county. The population is assumed to have taken the best available shelter within a radius of approximately one mile from their place of residence.

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ENERGY DIVISION

Solar and Special Studies Section

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SUMMARY

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<u>DCPA Review Notice</u>

This report has been reviewed in the Defense Civil Preparedness Agency and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Defense Civil Preparedness Agency.

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830
operated by
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MANUAL ESTIMATION OF FALLOUT CASUALTIES

Kathy S. Gant and Carsten M. Haaland

DETACHABLE SUMMARY

A method is described for enabling Emergency Operating Centers (EOCs) to estimate nuclear fallout casualties without the aid of computers. This method is compatible with the current manual method for estimating initial weapons effects. The new technique requires that the EOCs have information on nuclear detonations and upper wind conditions and that they have maps, a protractor, map overlay material, grease pencils, worksheets, and pencils. In addition, they will need two tables of data and a fallout casualty (FC) template, all supplied in this report.

Five steps are involved in the estimation of fallout casualties for an area:

1. sketching fallout wind streamlines on a map overlay,
2. plotting locations of nuclear detonations and their fallout streamlines,
3. measuring crosswind and upwind distances to detonation points from the point of interest,
4. reading radiation exposure tables and summing the contributions from different weapons to obtain the exposure at that point, and
5. using the FC template with the protection factor profile for the area to estimate fatalities and injuries.

The tables of radiation exposure are based on a modified Weapons Systems Evaluation Group-10 (WSEG-10) fallout model. The table of county protection factor profiles (PFPs) assumes a Community Shelter Plan (CSP) posture. In these profiles national shelters (within a radius of approximately 1 mile from the residence) are first filled to capacity, and when these shelters are full, home basements are used, with crowding of up to 50 people per basement if necessary. For the first time, the data base described and employed in producing these

tables combined the National Shelter Survey (NSS) listings with the 1970 Bureau of the Census home basement data. Detailed shelter postures were constructed for each of some 42,000 Standard Location Areas throughout the United States and then were aggregated to form the county protection factor profiles.

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*A Glossary of Acronyms for the report is given on p. xi.

GLOSSARY OF ACRONYMS, ABREVIATIONS, AND TERMS

CONUS	Continental United States
COTR	Contracting Officer's Technical Representative
CRP	Crisis Relocation Plan or Planning
CSP	Community Shelter Plan
DCPA	Defense Civil Preparedness Agency
DF	Identifying designator for fallout wind data
DFUS	"DF" locations in the continental United States
EOC	Emergency Operating Center
FAA	Federal Aviation Administration
FC	Fallout Casualty
GZ	Ground Zero
MT	Megaton
NSS	National Shelter Survey
NUDET	Nuclear Detonation
ORNL	Oak Ridge National Laboratory
PF	Protection Factor
PFP	Protection Factor Profile
PV	Physical Vulnerability of buildings to blast
R	Roentgen, unit of radiation exposure
SMSA	Standard Metropolitan Statistical Area
WSEG	Weapons Systems Evaluation Group
Z	Zulu (Greenwich time)

MANUAL ESTIMATION OF FALLOUT CASUALTIES

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ABSTRACT

A method is described for enabling Emergency Operating Centers (EOCs) to estimate nuclear fallout casualties without the aid of computers. This method is compatible with the current manual method for estimating initial weapons effects. The new technique requires that the EOCs have information on nuclear detonations and upper wind conditions and that they have maps, a protractor, map overlay material, grease pencils, worksheets, and pencils. In addition, they will need two tables of data and a fallout casualty (FC) template, all supplied in this report.

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1. INTRODUCTION

This report describes a method developed for estimating, without the use of a computer, the casualties (fatalities and injuries) from fallout from a nuclear attack. During and after a nuclear attack, personnel in various Emergency Operating Centers (EOCs*) may need to use such a method for damage estimation. At that time, computers may not be available because of damage, lack of electricity, or because they may be required for other computations. This method of estimation requires two sets of tables, one for fallout exposure and one for a Protection Factor Profile (PFP) for the U.S. population in the Community Shelter Plan (CSP), which, together with a fallout casualty (FC) template, maps, and weapon and wind data, enable the user to estimate fallout casualties, including both fatalities and injuries, on a county-by-county basis.

The scope-of-work statement from the Defense Civil Preparedness Agency (DCPA) is quoted as follows:

> Develop procedures to manually make estimates of casualties due to radioactive fallout from a nuclear attack. These procedures will be developed using basic data now available at the DCPA Computer Center which includes CRP and other various assumed attack patterns, postulated on various upper wind conditions and weapon yields in conjunction with population "in-place" utilizing best available shelter, relocated, etc. The procedures must be simple to apply, fast, and compatible with DCPA's present Manual Damage Estimation System procedures for estimating casualties resulting from initial weapons effects. The procedures must be supported by data which will ascertain that they are logical and consistent with present day technology in the areas of upper wind prognosis, attack pattern assumptions, weapons effects, fallout radiation effects, shelter protection and population distribution under varying conditions. The

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*A Glossary of Acronyms for this report begins on p. xi.

contractor will discuss step-by-step development of the project with the Contracting Officer's Technical Representative (COTR).

The procedures given in this report are applicable to any national shelter posture, whether obtained through the "in-place" CSP or through relocation under Crisis Relocation Planning (CRP). However, a different PFP table is required for each different shelter posture. In this report only one profile table is provided, corresponding to the best utilization of "in-place" shelters under CSP. The CRP posture was considered not to be developed sufficiently to prepare a PFP at the time of this publication.

The procedures for making manual estimates of fallout casualties are described in Chap. 2. Conclusions and recommendations are given in Chap. 3. Idealized 7-d* radiation exposures, based on the modified WSEG-10 fallout model, are listed in Appendix A for all combinations of three weapon yields and six effective wind speeds. Graphs are given for conversion of the 7-d exposures to 14-, 30-, and 120-d exposures. Protection factor profiles are listed for five protection factor (PF) categories for each county in Appendix B. The spacing between each listing of population under a PF category is arranged logarithmically so that the FC template can be laid over the table for easy evaluation of fatalities and injuries.

The preparation of the ORNL Shelter Availability Data Base and the manipulation of this data base to obtain the PFP table are described in detail in Appendices D and E of the report <u>Instrumentation Requirements for Radiological Defense of the U.S. Population in Community Shelters</u>, ORNL-5371, July 1978.

The basis for the lethality and injury functions and their use in constructing the FC template are described in Appendix C.

A discussion of the choice of areal unit for population representation is given in Appendix D. Reduced maps showing the eight DCPA regions and the population centroids of the counties are included.

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*Day will be abbreviated d throughout this report.

2. METHOD FOR MANUAL ESTIMATION OF FALLOUT CASUALTIES

2.1 Introduction

This chapter describes a method for estimating fallout casualties without the use of a computer. The five required steps are as follows:

1. Sketch fallout wind streamlines on suitable maps or map overlays based on meteorological conditions anticipated during the period of fallout.
2. Plot the location of nuclear detonations on the maps and sketch the hotlines from selected detonation points. The hotline is defined as the wind streamline for fallout that is drawn downwind from the detonation point.
3. Measure and record downwind distances from detonations and crosswise distances from hotlines to the locations at which casualties are to be estimated.
4. Use exposure tables to estimate and total the 7-d unsheltered radiation exposures at these locations.
5. Use the special FC template and the PFP tables to estimate fatalities and injuries.

These five steps are described in greater detail in this chapter.

2.2 Materials and Supplies

The following materials and supplies, in addition to information on nuclear detonations and fallout wind conditions, should be available:

1. A map of the DCPA region in which casualties are to be estimated. The map scale should be 1:2,500,000 and drawn on an equal area Alber's projection. These maps are available from DCPA. If there are concentrations of potential targets upwind in adjacent regions, particularly to the north and west, maps of those regions will also be necessary if the potential targets are not included within the given regional map.

2. A map overlay of the same scale, showing county outlines, population centroids of counties, a grid of latitude and longitude, and locations of DFUS stations (fallout weather data stations). Programs have been developed for drawing these maps by computer at Oak Ridge National Laboratory (ORNL). Photographs of these maps, considerably reduced in size, are shown in Appendix D.

3. Copies of work sheets for entering radiation exposures and calculations of fallout casualty estimates. These work sheets are discussed in Sect. 2.5 and 2.7.

4. Clear acetate or acrylic plastic sheet to overlay the maps and provide an erasable writing surface.

5. Grease pencils of at least three colors.

6. A protractor.

7. A straightedge, 14-18 in. long (may be made from paper).

8. Disposable tissues or rags to wipe off grease pencil markings.

In addition to these materials and supplies, the following items will be useful but not essential:

1. Pocket calculator or slide rule.

2. Cotton swab sticks for touching up grease pencil markings.

3. Rubber cement thinner for removing grease pencil markings (a different solvent may be used if desired).

Maps should have a solid backing and be mounted vertically on a wall or post, or be placed on a sturdy easel. Overlays can be taped in place or held by clamps. Maps may also be placed flat on a table or on the floor, but working over maps for several hours on the floor is uncomfortable and very tiring.

2.3 Step 1: Sketching Fallout Wind Streamlines*

2.3.1 Introduction

Streamlines should be sketched with grease pencil on the erasable acetate or clear plastic map overlay before the locations of weapon detonations are marked. Four or more streamlines sketched in advance will simplify the task of sketching hotlines from weapon bursts.

The locations of the streamlines are based on upper wind information. Executive Order 11490 assigns to the Department of Commerce (Weather Bureau) the responsibility for preparing and issuing currently, as well as in an emergency, forecasts and estimates of areas likely to be covered by radiological fallout in the event of nuclear attack, and for making this information available to federal, state, and local authorities.

The Weather Bureau maintains a network of "Rawin" observatories which measure by electronic methods the direction and speed of the wind from the earth's surface to high altitudes. These data are used primarily for analyzing and forecasting routinely the motions of the atmosphere. The data are transmitted to a central location at Suitland, Maryland, where they are processed by computer into several forms for a variety of uses. One form is the fallout vector data for use in preparation of fallout area forecasts. Data are prepared for about 100 locations in the continental United States (except Alaska) and for about 30 in Alaska, Hawaii, Puerto Rico, and southern Canada. The locations in the coterminous United States and Canada are shown in Fig. 2.1 and are listed in Table 2.1. Under the identifying designator for fallout wind data "DF"**, the data are transmitted over the Federal Aviation Administration (FAA) Service "C" Teletypewriter Facility to most Weather Bureau and FAA offices and to other governmental and private subscribers. The data are also relayed to Alaska, Hawaii, and Puerto Rico.

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*Portions of this section are taken from User's Manual, Meteorological Data for Radiological Defense, FG-E-5.6/1, Department of Defense, Office of Civil Defense, July 1970.

**"DFUS" for the continental United States, except Alaska, and for southern Canada; "DFAK" for Alaska; "DFHW" for Hawaii; and "DFCA" for Puerto Rico (Caribbean area).

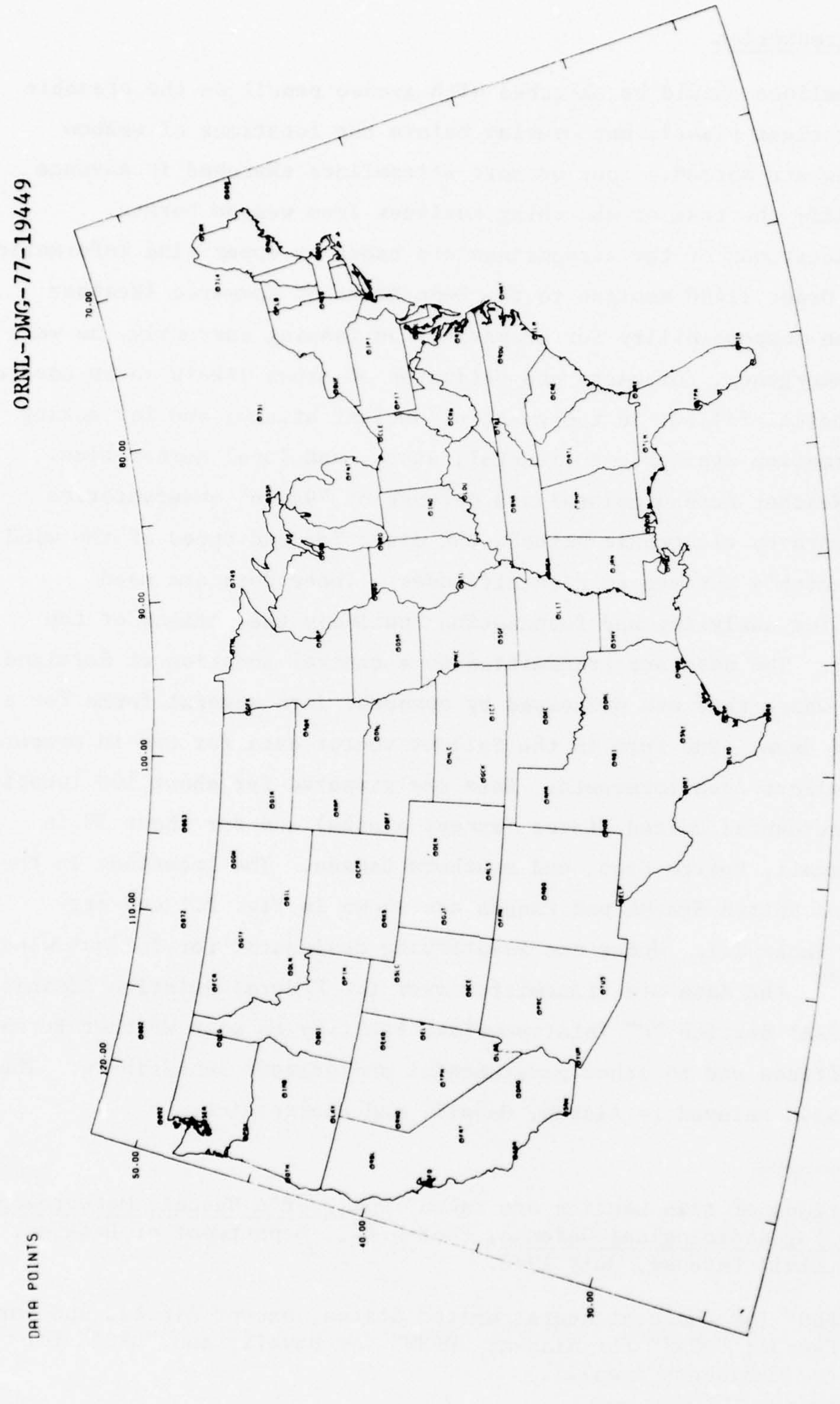

Fig. 2.1. Locations and code names of DFUS stations.

Table 2.1. Locations of DF data points in the continental United States and Canada.

The last two digits of the latitude specify the location in minutes.

	DFUS NAME	LOCATION NAME	STATE	LAT.	LON.		DFUS NAME	LOCATION NAME	STATE	LAT.	LON.
1.	ABI	ABILENE	TX	3225	9941	41.	GEG	SPOKANE	WA	4738	11732
2.	ABQ	ALBUQUERQUE	NM	3503	10637	42.	GFK	GRAND FORKS	ND	4757	9711
3.	ABR	ABERDEEN	SD	4527	9826	43.	GGW	GLASGOW	MT	4813	10637
4.	ALB	ALBANY	NY	4245	7348	44.	GJT	GRAND JUNCTION	CO	3907	10832
5.	ALS	ALAMOSA	CO	3727	10552	45.	GRB	GREEN BAY	WI	4429	8808
6.	AMA	AMARILLO	TX	3514	10142	46.	GTF	GREAT FALLS	MT	4729	11122
7.	ATL	ATLANTA	GA	3339	8425	47.	HAT	CAPE HATTERAS	NC	3516	7533
8.	AUG	AUGUSTA	ME	4419	6948	48.	HLC	HILL CITY	KS	3923	9950
9.	BAL	BALTIMORE	MD	3911	7640	49.	HOB	HOBBS	NM	3241	10312
10.	BCE	BRYCE CANYON	UT	3742	11209	50.	HOU	HOUSTON	TX	2946	9522
11.	BFF	SCOTTSBLUFF	NE	4152	10336	51.	ICT	WICHITA	KS	3739	9726
12.	BHM	BIRMINGHAM	AL	3334	8645	52.	ILM	WILMINGTON	NC	3416	7755
13.	BIL	BILLINGS	MT	4548	10832	53.	IMB	DAYVILLE	OR	4428	11936
14.	BNA	NASHVILLE	TN	3615	8634	54.	IND	INDIANAPOLIS	IN	3944	8617
15.	BOI	BOISE	ID	4334	11613	55.	INL	INTERNATIONAL FALLS	MN	4834	9323
16.	BOS	BOSTON	MA	4222	7102	56.	IPT	WILLIAMSPORT	PA	4115	7655
17.	BRO	BROWNSVILLE	TX	2554	9726	57.	JAN	JACKSON	MS	3219	9005
18.	BUF	BUFFALO	NY	4256	7844	58.	JAX	JACKSONVILLE	FL	3030	8142
19.	CAE	COLUMBIA	SC	3357	8107	59.	JFK	BROOKLYN	NY	4039	7347
20.	CAR	CARABOU	ME	4652	6801	60.	LAS	LAS VEGAS	NV	3605	11510
21.	CLE	CLEVELAND	OH	4124	8151	61.	LIT	LITTLE ROCK	AR	3444	9214
22.	CPR	CASPER	WY	4255	10628	62.	LKV	LAKEVIEW	OR	4213	12021
23.	CRP	CORPUS CHRISTI	TX	2746	9730	63.	LOU	LOUISVILLE	KY	3814	8540
24.	CRW	CHARLESTON	WV	3822	8136	64.	LRD	LAREDO	TX	2732	9927
25.	DAG	BARSTOW-DAGGETT	CA	3452	11647	65.	MEM	MEMPHIS	TN	3503	9000
26.	DAL	DALLAS	TX	3251	9651	66.	MIA	MIAMI	FL	2548	8016
27.	DBQ	DUBUQUE	IA	4224	9042	67.	MKC	KANSAS CITY	MO	3907	9436
28.	DEN	DENVER	CO	3945	10452	68.	MOB	MOBILE	AL	3041	8815
29.	DIK	DICKINSON	ND	4647	10248	69.	MSP	MINNEAPOLIS	MN	4453	9313
30.	DLN	DILLON	MT	4515	11233	70.	MSY	NEW ORLEANS	LA	2959	9015
31.	DRT	DEL RIO	TX	2922	10055	71.	OKC	OKLAHOMA CITY	OK	3524	9736
32.	DSM	DES MOINES	IA	4132	9339	72.	ONL	O'NEILL	NE	4227	9839
33.	EKO	ELKO	NV	4050	11547	73.	ORD	CHICAGO	IL	4159	8754
34.	ELP	EL PASO	TX	3148	10624	74.	OTH	NORTH BEND	OR	4325	12415
35.	ELY	ELY	NV	3917	11451	75.	PDX	PORTLAND	OR	4536	12236
36.	FAT	FRESNO	CA	3646	11943	76.	PIH	POCATELLO	ID	4255	11236
37.	FCA	KALLISPEL	MT	4818	11416	77.	PIT	PITTSBURGH	PA	4030	8013
38.	FMN	FARMINGTON	NM	3645	10814	78.	PLB	PLATTSBURGH	NY	4441	7331
39.	FNT	FLINT	MI	4258	8344	79.	PRC	PRESCOTT	AZ	3439	11226
40.	GCK	GARDEN CITY	KS	3756	10043	80.	RAP	RAPID CITY	SD	4403	10304

Table 2.1. (continued)

	DFUS NAME	LCCATION NAME	STATE	IAT.	LCN.
81.	RBL	RED BLUFF	CA	4009	12215
82.	RDU	RALEIGH	NC	3552	7847
83.	RIC	RICHMOND	VA	3730	7720
84.	RKS	ROCK SPRINGS	WY	4136	10904
85.	RNO	RENO	NV	3930	11947
86.	SAN	SAN DIEGO	CA	3244	11710
87.	SAT	SAN ANTONIO	TX	2932	9828
88.	SBA	SANTA BARBARA	CA	3426	11950
89.	SEA	SEATTLE	WA	4727	12218
90.	SFO	SAN FRANCISCO	CA	3737	12223
91.	SGF	SPRINGFIELD	MO	3714	9323
92.	SHV	SHREVEPORT	LA	3228	9349
93.	SLC	SALT LAKE CITY	UT	4046	11158
94.	SSM	SAULT STE. MARIE	MI	4628	8422
95.	STL	ST. LOUIS	MO	3845	9023
96.	TLH	TALLAHASSEE	FL	3023	8422
97.	TPA	TAMPA	FL	2758	8232
98.	TPH	TONAPAH	NV	3804	11705
99.	TRI	BRISTOL	TN	3629	8224
100.	TUS	TUCSON	AZ	3207	11056
101.	YUM	YUMA	AZ	3239	11436

	DFUS NAME	LCCATION NAME	STATE	IAT.	LCN.
.... CANADIAN STATIONS					
102.	609	ST. JCHN	NB	4518	06606
103.	714	QUEBEC	QB	4650	07114
104.	731	NORTH EAY	ON	4618	07927
105.	749	FT. WILLIAM	MB	4822	08918
106.	863	REGINA	SK	5027	10438
107.	872	MEDICINE HAT	AB	5003	11040
108.	882	REVELSTOKE	BC	5100	11809
109.	892	VANCOUVER	BC	4916	12304

State and local civil defense offices planning to make their own FC estimates should arrange for the receipt of DF messages that pertain to their areas of jurisdiction. The nearest FAA or Weather Bureau office can be contacted to arrange for appropriate relay of DF messages, unless the data are already available over state emergency circuits.

2.3.2 Wind data for fallout forecasts

The data (DF) are based on Weather Bureau observations made at 1200 Greenwich time [1200 Zulu (Z)].* Observed data are processed by the Weather Bureau into forecasts of the integrated effects of the wind layers on idealized particles falling to the surface from 53,000 ft. The vector given indicates the resultant direction and distance such a particle would be carried in 3 h.

The DF vector describes the direction to the nearest 10 degrees measured clockwise from true north and to the nearest 10-mile distance of travel in 3 h. A fallout forecast vector for each location and time is described by four digits: the first two indicate direction of windflow in tens of degrees, and the last two indicate the 3-h distance in tens of miles. For example, the four-digit block "1512" would mean that the direction is 150° clockwise from true north (windflow toward southeast) and the distance, 120 miles in 3 h.

Data for each location are transmitted to subscribers about 6 h after observation with three forecasts, for 12, 18, and 24 h after the observation. Each forecast is intended for use during one of the three 6-h periods centered on these times, that is, for the periods 9-15, 15-21 and 21-27 h after the observation.

The DF message format is illustrated in Table 2.2, in which the first line indicates that the data are for the United States, based on observations at 1200Z, or the 20th day of the month; the second line heads a group of locations in the northeastern United States; the left-hand column identifies the locations; and the second, third, and fourth columns describe DF vectors for use in time periods centered on 12, 18,

---

*Weather Bureau time notation for noon, Greenwich time.

Table 2.2. DFUS wind data for August 20, 1977

DFUS data based on 201200Z

NERN US

JFK	0715	0814	0913	BØS	0617	0717	0816	AUG	0619	0618	0716
CAR	0619	0618	0715	PLB	0716	0815	1014	ALB	0716	0815	1015
BUF	1014	1215	1315	IPT	0913	1014	1214	PIT	1112	1213	1312
BAL	0812	0911	1111	CRW	1210	1209	1308	LØU	1309	1207	1306

SERN US

RIC	0711	0910	1108	HAT	0611	0710	0808	RDU	0809	0908	1106
TRI	1108	1207	1306	BNA	1406	1305	1304	JAN	1603	1502	1802
BHG	1304	1203	1402	ATL	1205	1204	1303	CAE	0907	1006	1104
ILM	0709	0908	1106	JAX	0804	0804	0903	TLH	0904	0903	0902
TPA	1301	0901	0700	MIA	2503	2603	2603	MØB	1003	1002	1201
MSY	1202	1201	1701								

S CNTRL US

HØU	1705	1903	2003	SAT	1805	1904	1904	CRP	1904	2004	2104
BRØ	2104	2104	2204	LRD	2004	2004	2104	DRT	1804	1904	1904
HØB	1205	1005	1006	AMA	1006	0906	0907	ABI	1504	1403	1403
DAL	1604	1603	1602	SHV	1704	1703	1903	MEM	1504	1303	1503
LIT	1504	1403	1502	ØKC	1304	1103	0904	ALS	0809	0810	0811
DEN	0709	0710	0711	GCK	0907	0807	0708	HLC	0907	0707	0608
ICT	1105	0905	0706	MKC	1206	1105	0805	SGF	1305	1305	1003
STL	1307	1306	1205								

N CNTRL US

IND	1310	1309	1307	ØRD	1312	1310	1208	CLE	1213	1214	1312
FNT	1315	1315	1312	SSM	1317	1417	1315	GRB	1314	1312	1209
DBQ	3310	1208	1107	DSM	1207	1006	0806	ØNL	0908	0707	0609
RAP	0709	0610	0611	ABR	0908	0708	0509	MSP	1310	1108	0808
INL	1213	1110	0809								

NWRN US

GFK	1010	0808	0609	DIK	0710	0611	0512	GGW	0514	0515	0516
BIL	0613	0515	0516	GTF	0517	0517	0616	DLN	0518	0517	0617
FCA	0518	0515	0613	GEG	0517	0614	0813	SEA	PPIQW	0912	0912
PDX	0814	0914	0914	ØTH	0916	0916	0915	RBL	0915	0915	0915
LKV	0818	0817	0916	IMB	0618	0817	0916	BØI	0617	0716	0816
CPR	0611	0612	0613	BFF	0709	0710	0711				

Table 2.2. (continued)

SWRN US											
SLC	0612	0714	0715	PIH	0615	0615	0716	RKS	0611	0613	0714
GJT	0710	0711	0712	FMN	0709	0711	0811	ABQ	0808	0810	0810
ECE	0710	0712	0813	LAS	0809	0810	0911	ELY	0712	0814	0815
EKØ	0615	0716	0816	TPH	0812	0813	0814	RNØ	0814	0915	0915
SFØ	1012	1013	1013	FAT	0910	0911	0912	SBA	1008	1008	1008
DAG	0908	0909	0909	SAN	0906	0806	0907	YUM	0807	0807	0807
PRC	0708	0709	0810	TUS	0606	0707	0807	ELP	0905	0805	0906
CANADA											
609	0620	0620	0618								
714	0617	0714	0912								
731	1214	1315	1417								
749	1416	1314	1211								
852	1011	0810	0611								
863	0614	0514	0415								
872	0517	0416	0514								
882	0511	0609	0807								
892	0709	0909	1009								

and 24 respectively after 201200Z; that is, for the periods 202100Z to 210300Z, 210300Z to 210900Z, and 210900Z to 211500Z.

The symbolic form of the message is "iii ddss ddss ddss" (Table 2.2), where iii is the identifier for location (e.g., JFK, BØS, AUG, etc.); dd is the true direction toward which particles would fall, in tens of degrees (e.g., 07, 08, 09, etc.); and ss is the distance in tens of statute miles for 3-h fall from the 100-mb level (e.g., 15, 14, 13, etc.).

In Table 2.2 the first message group corresponding to the symbolic form "iii ddss ddss ddss" is "JFK 0715 0814 0913," which appears below "NERN US" (northeastern United States). Data are provided in convenient plotting sequence for each of the six areas of the continental United States (except Alaska) and separately for the other areas.

It is emphasized that the forecast times (observation time plus 12, 18, and 24 h, with a delay of about 6 h for processing and reporting) provide for overlap of the forecasts from one observation time to the next. This delay is intentional so that forecasts into the early post-attack period may be provided when new meteorological data might not be available. The third column data (observation time plus 24 h) would be used only if new data were not received.

2.3.3 Wind vectors

DF-vector wind indicators are drawn with grease pencil on the transparent overlay for the DCPA region (scale 1:2,500,000) to be analyzed. A protractor is placed on the map with the center at the DF data point location and the 0° to 180° line aligned parallel to the nearest longitude line. DF data point locations have been included for convenience in the ORNL program for the computer-prepared map overlays. The angle of the wind vector, measured clockwise from true north, is marked on the transparent overlay with the grease pencil.

As an example, the DFUS wind vector directions for Cape Hatteras from Table 2.2 are 60°, 70°, and 80°, listed under "SERN US" as "HAT 0611 0710 0808," for use 12, 18, and 24 h, respectively after 201200Z. Wind

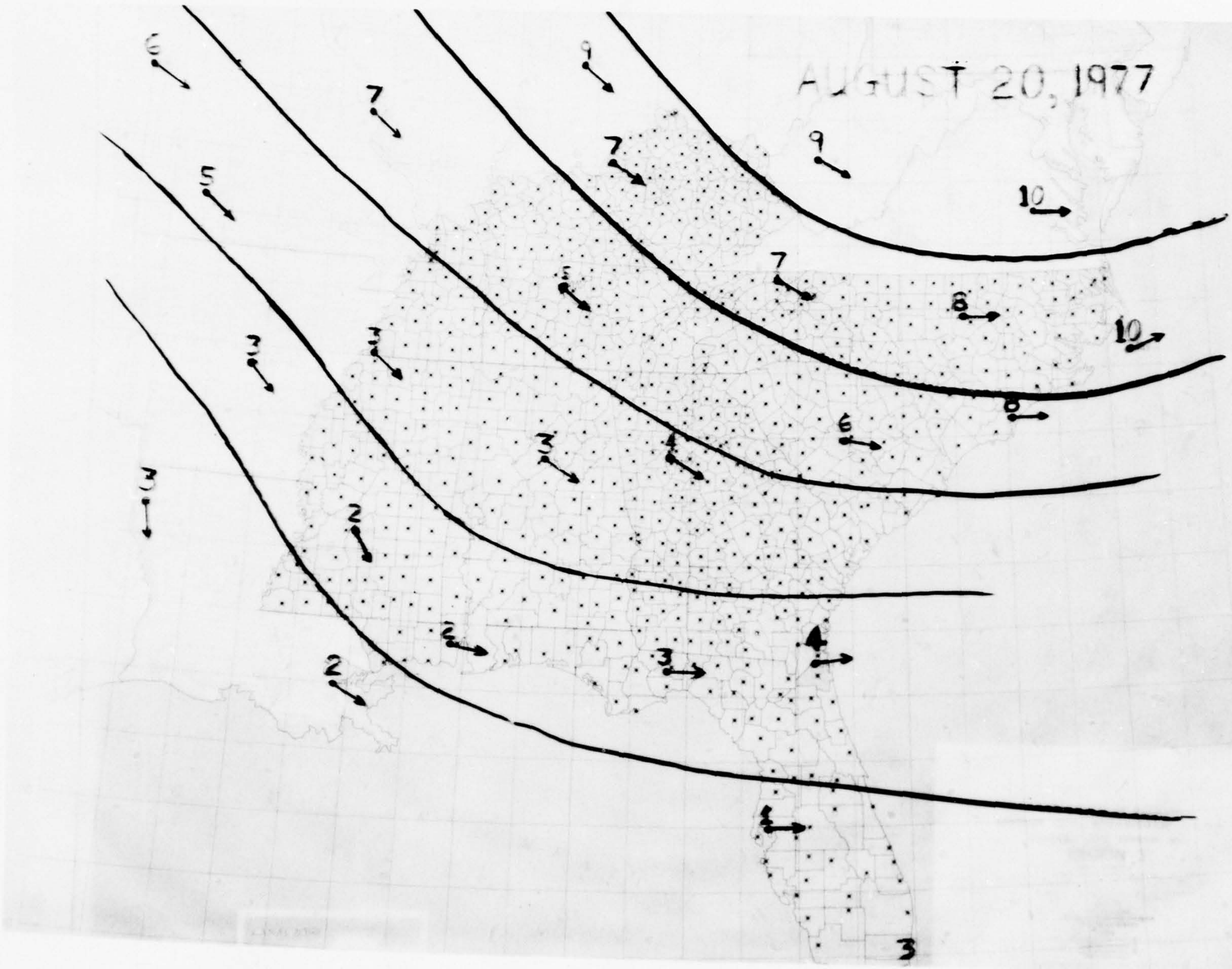

Fig. 2.2. Wind vectors (blue arrows) and streamlines (black lines) on an overlay of DCPA Region 3, for August 20, 1977.

vectors for 18 h after 201200Z are plotted on the DCPA overlay of the Region 3 map in Fig. 2.2. The vectors are indicated by blue arrows drawn (with grease pencil) about an inch long in the direction of wind flow. The other end of the arrow originates at a small disc drawn over the DF data point location. The code for the 3-h wind distance is marked above the DF data point location in tens of miles. This method is preferred to scaling the length of the arrow in proportion to the wind distance because of its simplicity and the elimination of excessively long arrows that would result in some cases.

2.3.4 Streamlines

After the wind vectors have been marked, a few streamlines are sketched on the map overlay at locations approximately midway between the DF data locations. The streamlines should be roughly parallel to the nearest DF wind vectors, as shown by the solid black lines in Fig. 2.2. The first attempt at sketching streamlines may involve considerable time and uncertainty. Hence, it is recommended that potential users of this method should regularly practice preparing streamline sketches corresponding to different weather conditions.

Under most normal weather conditions, the streamlines will follow fairly simple patterns, such as those in Fig. 2.2. The more complex streamline pattern shown by the black lines in Fig. 2.3 will occur frequently in summer months and requires more effort to sketch. The DFUS data on which the streamlines in Fig. 2.3 are based are listed in Table 2.3. This type of wind pattern occurred on 5 d during a 30-d period in July and August of 1977 and would produce an entirely different fallout forecast than that predicted from the more typical conditions in Fig. 2.2. This fact emphasizes the need for the capability to plot streamlines based on actual meteorological conditions.

The person plotting the streamlines should not be too concerned with the lack of precision in this method. It is sufficient for the estimation process to obtain a general pattern of the streamlines. An error of 20 to 50 miles in positioning the streamline may have less influence on the fallout estimation than other factors, such as the incorrect determination of burst location and yield. Furthermore, a

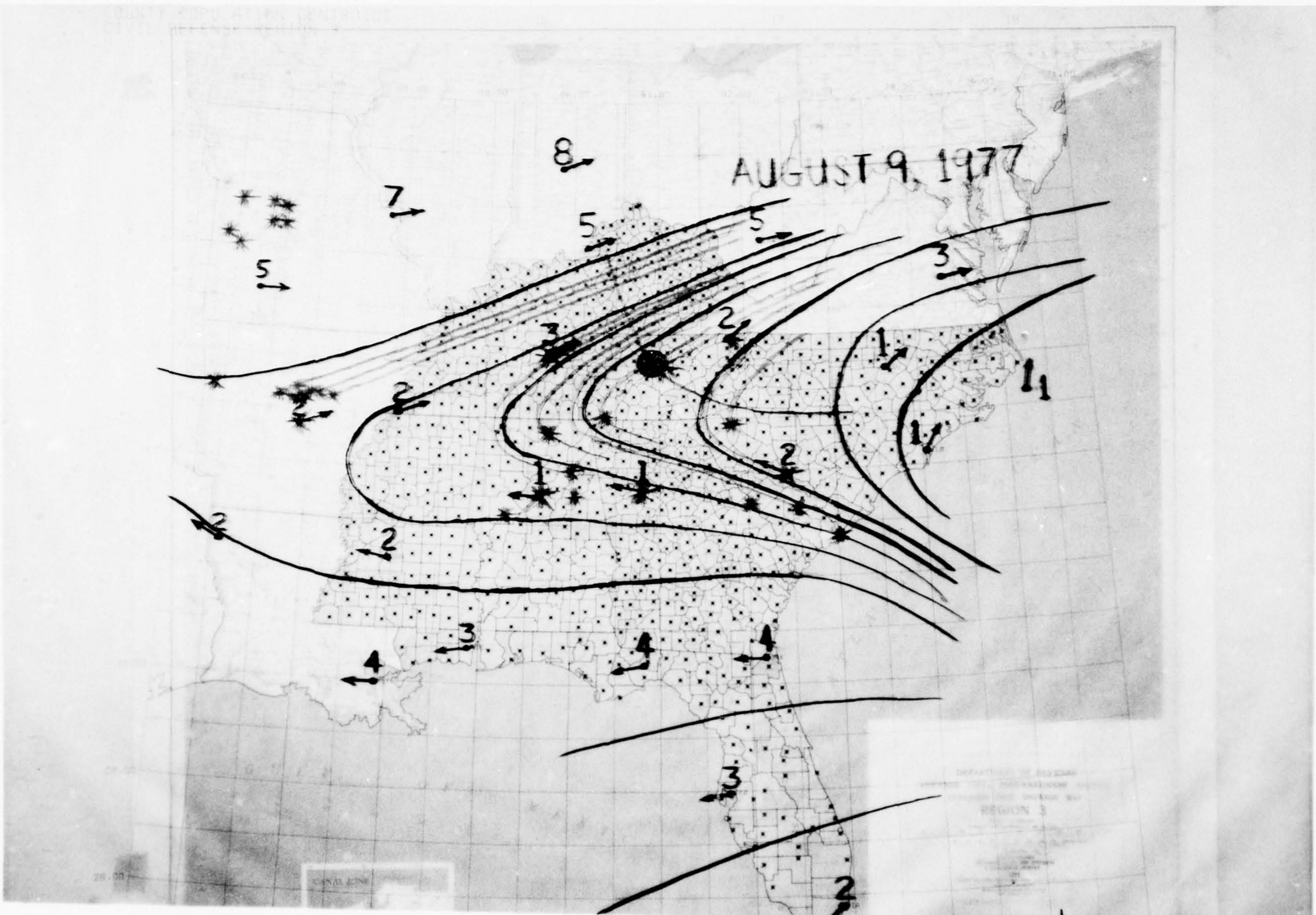

Fig. 2.3. Wind vectors (blue arrows), streamlines (black lines), nuclear detonation points (red asterisks) and hotlines (red lines) on an overlay of DCPA Region 3, for August 9, 1977.

Table 2.3. DFUS wind data for August 9, 1977

DFUS data based on 091200Z

NERN US

JFK	1009	0908	0808	BØS	1015	1012	0912	AUG	1020	1016	0916
CAR	1021	1121	1020	PLB	1117	0915	0815	ALB	1013	0911	0812
BUF	0911	0812	0713	IPT	1009	0809	0710	PIT	0808	0708	0710
BAL	1006	0805	0606	CRW	0805	0706	0707	LØU	0705	0806	0806

SERN US

RIC	0803	0603	0504	HAT	0101	3401	3502	RDU	0501	0202	0302
TRI	0502	0502	0603	BNA	0703	0903	0802	JAN	2802	2501	2502
BHM	2701	2501	2501	ATL	2801	2901	2801	CAE	2902	3102	3102
ILM	0301	0102	0302	JAX	2704	2703	2704	TLH	2604	2603	2604
TPA	2603	2603	2603	MIA	2302	2402	2402	MØB	2603	2603	2503
MSY	2704	2703	2503								

S CNTRL US

HØU	2603	2703	2603	SAT	2304	2404	2504	CRP	2303	2603	2603
BRØ	2403	2603	2603	LRD	2404	2504	2504	DRT	2305	2405	2505
HØB	2003	1902	1902	AMA	1203	1204	1103	ABI	2104	2203	2302
DAL	2401	2502	2702	SHV	3002	2701	2702	MEM	0702	1002	0901
LIT	0702	0902	0802	ØKC	1102	1202	1002	ALS	0908	0908	0809
DEN	0912	0912	0811	GCK	1007	1008	1007	HLC	0910	1011	1010
ICT	0906	1007	1007	MKC	0909	0909	0909	SGF	0905	0905	0906
STL	0807	0808	0809								

N CNTRL US

IND	0708	0809	0810	ØRD	0712	0813	0813	CLE	0809	0710	0711
FNT	0812	0713	0714	SSM	0814	0714	0714	GRB	0714	0714	0814
DBQ	0813	0814	0814	DSM	0813	0914	0913	ØNL	0914	1015	1015
RAP	1014	1015	0916	ABR	0913	1015	0917	MSP	0814	0914	0915
INL	0711	0811	0713								

NWRN US

GFK	0912	0913	0915	DIK	1014	1017	1018	GGW	1116	1117	1215
BIL	1113	1114	1114	GTF	1113	1213	1313	DLN	1009	1209	1210
FCA	1311	1412	1512	GEG	1409	1509	1610	SEA	1705	1906	1906
PDX	1904	2004	2005	ØTH	2102	2003	2103	RBL	0706	0906	0905
LKV	0804	3004	1103	IMB	1303	1604	1704	BØI	0906	1006	1205
CPR	1014	1013	0913	BFF	1014	1014	0913				

Table 2.3. (continued)

SWRN US

SLC	0810	0810	0910	PIH	0909	0909	1008	RKS	0913	0912	0912
GJT	0810	0810	0811	FMN	0806	0807	0808	ABQ	0904	0904	0905
BCE	0609	0709	0810	LAS	0506	0706	0906	ELY	0710	0710	0809
EKØ	0709	0809	0908	TPH	0609	0709	090;	RNØ	0708	0808	0908
SFØ	0708	0808	0908	FAT	0707	0808	0907	SBA	0805	0906	1005
DAG	0605	0805	1005	SAN	0703	0903	1103	YUM	0403	0603	0903
PRC	0404	0605	0805	TUS	3401	0101	0502	ELP	2602	2701	2500

CANADA

609	1022	1121	1019
714	1121	1019	0918
731	0915	0815	0715
749	0712	0711	0711
852	0811	0811	0811
863	1115	1114	1311
872	1316	1416	1514
882	1512	1613	1712
892	1607	1707	1808

large attack [10,000 megatons (MT)] may change the weather pattern with the sudden input of a large amount of energy (equivalent to about 1 h of midday sunshine over the entire United States), dust clouds in the stratosphere, and chemical changes in the upper atmosphere.*

2.4 Step 2: Plotting Nuclear Detonations

It is assumed that the centers preparing fallout casualty estimations will have information on nuclear detonations (NUDETs) within a short time after the attack. A logbook should be kept in which information is entered as each nuclear detonation is reported. In some EOCs, this information may be received on teletype.

The following information on NUDETs should be recorded if available:

1. Serial number of entry (for identification).
2. Location name nearest the nuclear detonation.
3. State.
4. Geographical coordinates (latitude/longitude).
5. Height of burst (air or surface).
6. Dimensions of nuclear cloud at time of stabilization.
7. Yield.
8. Time of detonation.
9. Time of notification.
10. Comments.

The locations of surfaceburst NUDETs within the DCPA region and those upwind close enough to produce fallout in that region (depending on the effective wind speed and weapon yield) are marked on the map overlay with grease pencil. The locations are found on the map either by place name (labeled on the DCPA maps) or by geographical coordinates, if they are given.

Hotlines are sketched on the overlay, preferably with a different color grease pencil than that used for the streamlines. The hotline begins at a nuclear detonation location and is drawn downwind in a

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*National Academy of Sciences, Long-Term Worldwide Effects of Multiple Nuclear-Weapons Detonations, National Research Council, 1975.

direction approximately parallel with the nearest streamline or wind arrow. A few selected hotlines are shown in red in Figs. 2.3 and 2.4. When a detonation is located in an area of extreme curvature of streamlines, it is helpful to sketch the hotline a short distance upwind to get a better feeling for the curvature immediately downwind from the detonation. There are two detonations shown in Fig. 2.3 on which the hotline has been extended upwind for this purpose.

2.5 Step 3: Measuring Downwind and Crosswind Distances

Each area for which fallout casualty estimates are to be made will require a separate work sheet as in Fig. 2.5. Data on upwind NUDETs that could also contribute fallout to the area are listed in the spaces provided.

The crosswind line is sketched through the location perpendicular to hotlines and streamlines in the vicinity where the exposure is being estimated. A crosswind line is shown in green in Fig. 2.3.

Crosswind and upwind distances can be measured with a straightedge made from a folded piece of paper on which tic marks have been transferred from the scale given on the map. When the hotlines and crosswind lines are curved as they are in Fig. 2.3, the straightedge is laid flat on the map and lined up with one piece of the curved line at a time. The "zero" of the straightedge is placed at one end of the curve and the straightedge is lined up with as much of the curved line that lies approximately along the straightedge. Where the curved line pulls away from the straightedge, the straightedge is rotated without sliding or lifting it from the map until it is lined up with the next piece of the curve. The more curved the line, the more pieces of shorter length there will be.

An alternate method of measuring the crosswind and upwind distances would be to use a map-measuring tool, a device with a small wheel that is run over the curve on the map. It is also possible to lay a piece of unstretchable string on the curve, mark the end points, and then measure the length.

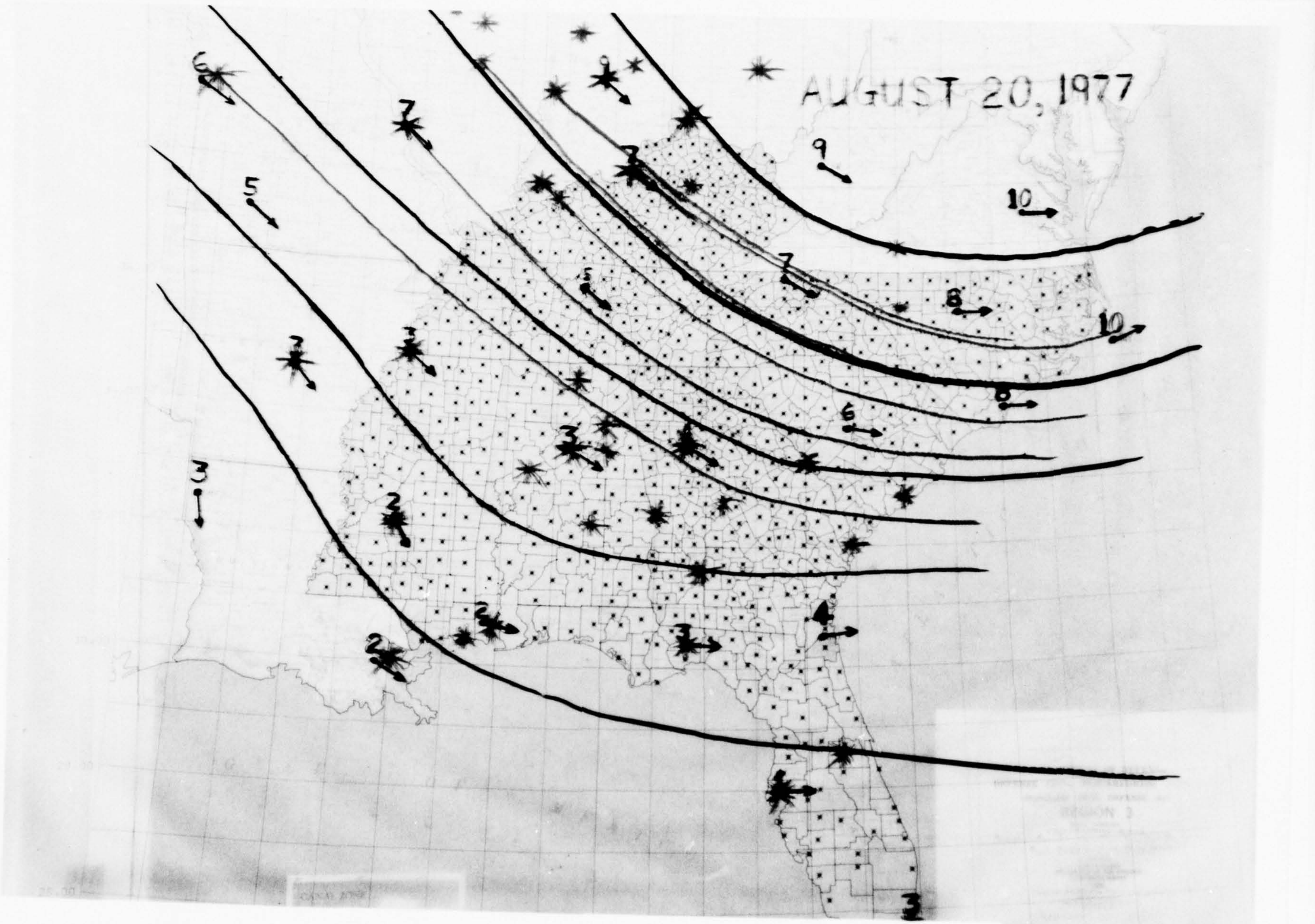

Fig. 2.4. Wind vectors (blue arrows), streamlines (black lines), nuclear detonation points (red asterisks) and hotlines (red lines) on an overlay of DCPA Region 3, for August 20, 1977.

Fig. 2.5. Work sheet for summarizing radiation exposure for an area.

Estimation of 7-d Exposure — Work Sheet — Sheet _____ of ____

(County or Counties) (State) (Latitude) (Longitude) (Date)

(Location of County Population Centroid)

NUDET Information						Estimation of 7-d Exposure				
No.	Location Name	State	Coordinates		Yield	Distance Upwind (miles)	Distance Cross-Wind	Mean Wind Speed	7-d Expo-sure	Cum. Expo-sure
			Latitude	Longitude						

The crosswind and upwind distances (together with other data on the nuclear detonations) are entered on the work sheet for a county, as shown in the sample in Fig. 2.6. If possible, two people should work on this part of the estimation. One person should measure and call out distances and county names, which are printed on the DCPA map; the other person should write the data on the appropriate work sheets.

2.6 Step 4: Estimating Radiation Exposures

When the crosswind and upwind distances from a given county population centroid to the NUDETs have been recorded, the 7-d unsheltered radiation exposures are obtained by consulting the tables in Appendix A. Tables are provided for three yields of weapons--small, medium, and large--corresponding to 1, 5, and 20 MT respectively. Weapons under 1 MT will be categorized as small, those from 1 to 5 MT as medium, and those above 5 MT as large. These categories are consistent with those used to estimate the initial weapon's effects (DCPA Manual Damage Estimation System--CPG 2-9, September 1976).

The fallout phenomenon is too complicated to permit simple interpolation of the numbers in the tables to find exposures for weapons of yields other than those for which the tables were prepared. The error introduced into the final fallout casualty estimate because only three yields are represented in the tables is considered to be comparable with possibly errors introduced from other factors, such as incomplete weapon detonation information, inaccurate or incomplete wind data, or inaccurate estimation of the population PFP.

The tables in Appendix A are prepared for seven wind speeds (5, 10, 20, 30, 40, 50, and 60 mph) for each yield range of weapon (small, medium and large). The mean wind speed along a hotline is estimated by averaging the distance code numbers of the 3-h wind vectors at the DF stations in the vicinity of the hotline. These numbers, in tens, were entered on the map when the streamlines were being prepared. The average of these numbers, quickly estimated from the map, must then be multiplied by 10 and then divided by 3 to obtain the speed in miles per hour. This number for the mean wind speed is entered in the appropriate box on the work sheet.

Fig. 2.6. Example of estimating radiation exposure.

Estimation of 7-d Exposure		Work Sheet		Sheet 1 of 2
ANDERSON	TN	36° 7′	84° 12′	20 AUG 77
(County or Counties)	(State)	(Latitude)	(Longitude)	(Date)
		(Location of County Population Centroid)		

NUDET Information						Estimation of 7-d Exposure				
No.	Location Name	State	Coordinates		Yield	Distance Upwind (miles)	Distance Cross-Wind	Mean Wind Speed	7-d Expo-sure	Cum. Expo-sure
			Latitude	Longitude						
1	ST. LOUIS	MO	38° 53′	90° 11′	M	400	80	20	3	3
2	"	"	38° 53′	90° 7′	S	"	"	"	0	3
3	"	"	38° 50′	90° 5′	S	"	"	"	0	3
4	"	"	38° 41′	90° 10′	M	"	"	"	3	6
5	"	"	38° 41′	90° 9′	S	"	"	"	0	6
6	"	"	38° 31′	90° 13′	S	"	"	"	0	6
7	"	"	38° 32′	89° 51′	S	"	"	"	0	6
8	"	"	38° 36′	90° 8′	L	"	"	"	21	27
9	"	"	38° 37′	90° 11′	L	"	"	"	21	48
10	"	"	38° 53′	90° 4′	M	"	"	"	3	51
11	EVANSVILLE	IN	37° 58′	87° 35′	L	225	20	20	472	523
12	"	"	38° 2′	87° 32′	S	"	"	"	23	546
13	OWENSBORO	KY	37° 44′	87° 10′	S	200	20	20	28	574
14	"	"	37° 46′	87° 6′	M	"	"	"	150	724
15	SPRINGFIELD	IL	39° 50′	89° 40′	M	385	0	20	37	761
16	"	"	39° 49′	89° 39′	M	"	"	"	37	798

Fig. 2.6. (continued)

Estimation of 7-d Exposure — Work Sheet — Sheet 2 of 2

ANDERSON	TN	36° 7′	84° 12′	20 AUG 77
(County or Counties)	(State)	(Latitude)	(Longitude)	(Date)
		(Location of County Population Centroid)		

NUDET Information					Estimation of 7-d Exposure					
No.	Location Name	State	Coordinates: Latitude	Coordinates: Longitude	Yield	Distance Upwind (miles)	Distance Cross-Wind	Mean Wind Speed	7-d Expo-sure	Cum. Expo-sure
17	DECATUR	IL	39° 51′	88° 56′	M	360	25	20	34	832
18	"	"	39° 50′	88° 52′	S	"	"	"	6	838
19	PEORIA	IL	40° 33′	89° 40′	M	425	35	20	20	858
20	"	"	40° 40′	89° 37′	M	"	"	"	20	878
21	"	"	40° 40′	89° 37′	M	"	"	"	20	898
22	"	"	40° 40′	89° 41′	S	"	"	"	2	900
23	BLOOMINGTON	IN	40° 29′	88° 59′	S	[illegible]	50	20	2	902
24	KNOXVILLE	TN	35° 58′	83° 57′	S	20	0	20	0	902
25	NASHVILLE	TN	36° 7′	86° 41′	S	120	70	20	0	902
26	WARTBURG	TN	36° 13′	84° 12′	L	20	0	20	12195	13097

The appropriate table in Appendix A, corresponding to the yield range and nearest effective wind speed, is now consulted to obtain the 7-d unsheltered radiation exposure. The appropriate value is found in the row corresponding to the nearest downwind distance and in the column labeled with the closest crosswind distance. Interpolation may be used here if the distances downwind and crosswind found on the map are not the same as those given in the tables.

The estimated 7-d unsheltered radiation exposure for a particular county is entered for each detonation in the box marked "7-d exposure" on the work sheet (Fig. 2.6). This number is then added to the number in the row above under "Cum. Exposure," which stands for "cumulative unsheltered 7-d exposure."

When all the detonations that could possibly affect the area under consideration have been entered on that area's work sheet, together with the associated 7-d exposures, the last number in the "Cum. Exposure" column will give the total unsheltered 7-d radiation exposure. Thus, for example, the total unsheltered 7-d radiation exposure estimated for Anderson County in Fig. 2.6 is 13,097 roentgens (R). This number, rounded to the nearest one hundred, will be used to estimate fallout injuries and fatalities. The final hypothetical detonation on Wartburg, Tennessee, in Fig. 2.6 is assumed to be a weapon intended for the Oak Ridge Gaseous Diffusion Plant and is entered solely for instructional purposes.

2.7 Step 5: Estimating Fallout Injuries and Fatalities

If there are no casualties because of initial effects of weapons, the fallout casualties, both fatalities and injuries, may be estimated directly from the appropriate table of county PFPs with the aid of the FC template, inserted in the cover pocket and also shown in Fig. 2.7. Protection factor profiles for the population of each county, assuming the "in-place" shelter mode under the Community Shelter Plan (CSP), are listed in Appendix B. The process of preparing these tables is described in Appendices D and E of Instrumentation Requirements for Radiological Defense of the U.S. Population in Community Shelters, ORNL-5371, August

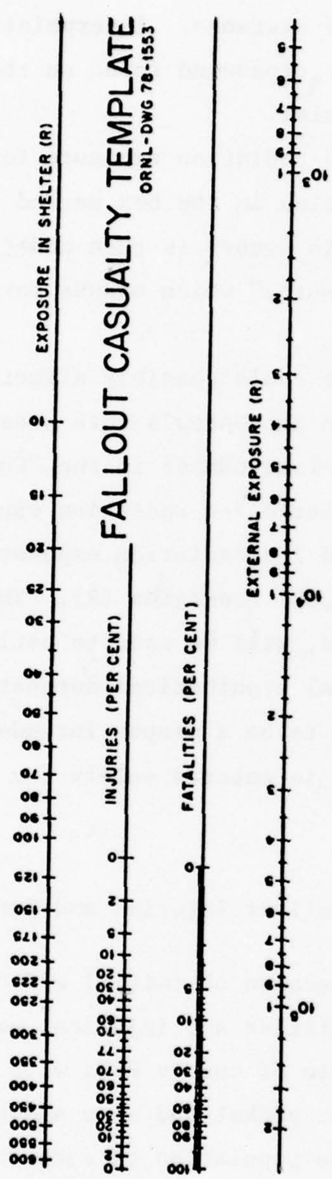

Fig. 2.7. Fallout casualty template.

This copy is reduced to 62% of the size of the template in the back cover.

1978. If the population were sheltered in other than the CSP mode, such as a Crisis Relocation Plan (CRP) mode, a different profile would be required. Only the CSP mode has been considered at this time.

The listing of county PFPs gives the total 1970 population for each county and includes estimates of the percentage of the county population in each of five PF categories. Each county is listed alphabetically within its state, and each state is listed alphabetically within its DCPA region. The percentage estimates are positioned on the page in such a way that the table can be used directly with the FC template.

The FC template has four parallel scales: external radiation exposure in roentgens, fatalities in percentages, injuries in percentages, and radiation exposure in shelters in roentgens. The template should be placed on the PFP table so that the lowest scale is parallel with the printed rows. The estimated value of the total external radiation exposure from the work sheet is located on this scale. The template is moved horizontally until the value of the total external exposure is aligned with the decimal point of the PF 400 column of the table. The percentage of fatalities and injuries in the various PF categories can then be estimated by sliding the template vertically on the page until the desired scale is aligned with the county of interest. The position of the decimal point for each PF category for the county in question on each scale on the template gives the percentage of injuries or casualties as desired. All people in PF categories with decimal points falling to the left of the red portion of the FC template will be listed as fatalities. Those in PF categories with decimal points falling to the right of the colored portions of the FC template will have neither fallout injuries nor fatalities.

As an example, suppose the estimated 7-d free-field radiation exposure at a particular county centroid is 5000 R. The PFP for the chosen county is found in Appendix B. Then the FC template is laid on the page so that the tic mark by the number 5 between 10^3 and 10^4 ($5000 = 5 \cdot 10^3$) lies over the decimal point of the PF 400 column on the right side of the PFP table. The lines on the template are aligned to be parallel with the lines printed on the table. To read the fallout fatalities for the particular county, the FC template is moved until the

"FATALITIES" line is just above the row of numbers for that county, while keeping the "5000 R" tic aligned over the PF 400 decimal point.

After the template is positioned, the decimal points of the PF 70 and PF 400 categories on the table will be to the right of the colored portion, so there will be no fallout injuries or fatalities in these categories.

The decimal point of the PF 28 category falls under the tic mark corresponding to 2% fatalities on the "FATALITIES" line. By sliding the FC template down to the "INJURIES" line, maintaining the scales parallel to the printed rows, the decimal point of the PF 28 category falls under the tic mark, corresponding to about 7% injuries.

Similarly, the location of the decimal point for the PF 15 category indicates about 19% fallout fatalities and 77% injuries. The decimal point for PF 5 falls to the left of the colored region of the FC template; thus, there are 100% fatalities in this category.

A work sheet for each county, as presented in Fig. 2.8, is very useful for maintaining a record of the procedure for estimating fallout fatalities and injuries. This work sheet is designed so that fatalities and injuries from initial weapons effects can be taken into account. Casualties from initial weapons' effects will result in a modified PFP to be described later. Blanks on the work sheet for the percentages of population in each PF category are spaced so that the FC template may be used directly on the work sheet* if desired.

A sample work sheet estimating fallout fatalities and injuries for Anderson County, Tennessee, is shown in Fig. 2.9. In this estimate there are no fatalities or injuries from initial weapons effects, and the 7-d free-field exposure is 13,100 R, as estimated in the previous section. The Anderson County PFP for the CSP is found in Table B.1

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*The spacing, S, in centimeters, of the decimal points under the various protection categories is given by $S = 9.5 \log_{10} PF$. Hence, with a centimeter scale placed on the work sheet with 6.6 cm ($= 9.5 \log_{10} 5$) lined up with the decimal point for PF 5, the locations for the decimal points for PFs 15, 28, 70, and 400 should be approximately at 11.2, 13.7, 17.5, and 24.7 cm respectively. Reproduction processes may alter these spacings; hence, care should be taken that only correct forms are used.

Fig. 2.8. Work sheet for estimating fallout casualties.

Estimation of Fallout Fatalities and Injuries   Work Sheet   Sheet____of____

____

(County)   (State)   (Population)   (Population Less Initial Effects Fatalities)   (Date)

Estimate No:_____Initial Effects Fatalities:_____Initial Effects Injuries:_____7-d Free-Field Radiation Exposure:_______

Protection Categories: PF 5   PF 15   PF 28   PF 70   PF 400

1. Initial Profile: ________.________.________.________.________.

2. Initial Effects Injuries: ________.________.________.________.________.

3. Working Line: ________.________.________.________.________.

4. Final Profile: ________.________.________.________.________.

5. Template fat.: ________.________.________.________.________.

6. Fallout fat.: ________.________.________.________.________.

7. Template inj.: ________.________.________.________.________.

8. Fallout inj.: ________.________.________.________.________.

Total Fallout Fatalities:______________Total Fallout Injuries:______________

Fig. 2.9. Sample work sheet, estimating fallout casualties for Anderson County, August 20, 1977, when there are no fatalities or injuries from initial weapons effects.

Estimation of Fallout Fatalities and Injuries — Work Sheet — Sheet 1 of 1

ANDERSON (County) — TN (State) — 61494 (Population) — (Population Less Initial Effects Fatalities) — 20 AUG 77 (Date)

Estimate No: 1 Initial Effects Fatalities: 0 Initial Effects Injuries: 0 7-d Free-Field Radiation Exposure: 13,100

Protection Categories:	PF 5	PF 15	PF 28	PF 70	PF 400
1. Initial Profile:	0.	0.	63.	18.	19.
2. Initial Effects Injuries:	0.	0.	0.	0.	0.
3. Working Line:	.	.	.	.	.
4. Final Profile:	0.	0.	63.	18.	19.
5. Template fat.:	100.	100.	65.	2.	0.
6. Fallout fat.:	0.	0.	41.	0.	0.
7. Template inj.:	0.	0.	35.	8.	0.
8. Fallout inj.:	0.	0.	22.	1.	0.

Total Fallout Fatalities: 41% or 25,000 Total Fallout Injuries: 23% or 14,000

under Region 3, Tennessee. The percentages of the population are entered under each PF category on line 1, titled "Initial profile". There are no casualties because of initial weapons effects; thus, lines 2 and 3 are left blank. Line 4, "Final profile," will be the same as line 1.

The FC template can now be placed directly on the work sheet to estimate fallout fatalities and injuries (because there were no initial effects casualties, the template could have also been used directly on Table B.1). The location corresponding to the number 13,100 ($1.31 \cdot 10^4$) is found on the lowest scale, that is, the scale labeled "EXTERNAL 7-DAY EXPOSURE (R)," and this location is laid over the decimal point of the PF 400 column. The estimated fallout fatalities and injuries in percentages are then read on the appropriate scales on the template, according to the position the scales are intercepted by the decimal points corresponding to the various protection categories. These percentages for fatalities and injuries are entered on the work sheet on lines 5 and 7 respectively. The "Final profile" percentages in line 4 are multiplied by the decimal fractions (percentages ÷ 100) to obtain fatalities and injuries in their respective protection categories, and the results are entered on lines 6 and 8. The numbers are rounded off to the nearest percent. The resultant percentages for fallout fatalities and injuries in each PF category are listed on lines 6 and 8, titled "Fallout fat." and "Fallout inj." respectively. These percentages are summed across the line, converted to their decimal fraction, and multiplied by the county population to give the total fallout fatalities and injuries, which are then listed across the bottom of the work sheet.

When initial effects fatalities and injuries have been estimated for a county, the PFPs must be modified to exclude those already dead and to reflect the increased vulnerability to radiation of those who have been injured by initial effects. Initial effects fatalities are first subtracted from the total population. The initial distribution of the surviving population throughout the various protection categories is assumed to be the same as the profile given in the PFP tables (Table B.1 for CSP). In other words, the fatalities due to initial effects are assumed to be distributed among the protection categories in the same

proportion as the original CSP population. The total number of people in each protection category, if needed, would be obtained by multiplying the decimal fraction corresponding to the original percentage in that category times the population after initial effects fatalities have been subtracted.

In Fig. 2.10, initial effects fatalities have been assumed to be 6440. This number is subtracted from the total population (61,494) to obtain 55,054, which is entered in the appropriate space. The initial profile on line 1 is copied from the Anderson County PFP in Table B.1. The number of people at PF 28, for example, is now 63% of 55,054, not 63% of 61,494, because of the assumed distribution of initial effects fatalities.

The injuries due to initial effects have been calculated to be 4334, which is 8% of the surviving population of 55,054. The population injured by initial effects is assumed to be distributed through the PF categories in the same way as the initial population. In other words, 63% of the 8%, or 5%, is in PF 28; 18% of the 8%, or 1% (rounded off), is in PF 70; and 19% of the 8%, or 2%, is in PF 400.

Those who have been injured by initial effects will have a lower tolerance for radiation exposure. Furthermore, damage from initial effects may have reduced the protective capability of their shelter. These factors are taken into account approximately by moving the numbers for the initial effects injuries into the next lower PF categories.

Thus, for example, in Fig. 2.10, 5% is subtracted from PF 28 and added to the next lower category, PF 15; 1% is subtracted from PF 70 and added to PF 28; and 2% is subtracted from PF 400 and added to PF 70. These steps are indicated on lines 2, 3, and 4 of the work sheet. The blast injuries are listed as a percentage of the surviving population on line 2; they have been subtracted in the top part of line 3 and added to the next lower PF category in the lower part of line 3. The final profile appears on line 4, with percentages 0, 5, 59, 19, and 17.

The FC template is now applied to line 4 to obtain percentages for fallout fatalities and injuries as before. The total fallout fatalities and injuries are calculated by multiplying the resulting percentages

Fig. 2.10. Sample work sheet estimating fallout casualties for Anderson County, August 20, 1977 when there are casualties from initial weapons effects.

Estimation of Fallout Fatalities and Injuries — Work Sheet — Sheet 1 of 1

(County)	(State)	(Population)	(Population Less Initial Effects Fatalities)	(Date)
ANDERSON	TN	61494	55054	20 AUG 77

Estimate No: 2 Initial Effects Fatalities: 6440 Initial Effects Injuries: 4334 (8% of 55054) 7-d Free-Field Radiation Exposure: ______

Protection Categories:	PF 5	PF 15	PF 28	PF 70	PF 400
1. Initial Profile:	0.	0.	63.	18.	19.
2. Initial Effects Injuries:	0.	0.	-5.	-1.	-2.
3. Working Line:	0.	0 +5.	58 +1.	17 +2.	17 0.
4. Final Profile:	0.	5.	59.	19.	17.
5. Template fat.:	100.	100.	65.	2.	0.
6. Fallout fat.:	0.	5.	38.	0.	0.
7. Template inj.:	0.	0.	35.	8.	0.
8. Fallout inj.:	0.	0.	21.	2.	.

Total Fallout Fatalities: 43% or 24,000 Total Fallout Injuries: 23% or 13,000

(converted to decimal fractions) by the surviving population instead of the initial population. For example, in Fig. 2.10, the total of 24,000 fallout fatalities is obtained by 43% of 55,054, not of 61,494.

2.8 Simplifications

The method given for manual estimation of fallout casualties is tedious and time consuming because many upwind weapons and many areas must be considered. The time required to make the estimations can be reduced considerably by practice on the part of the estimators and by assigning more than one person to the task, as suggested previously.

The number of areas to be considered per state may be reduced at the discretion of the casualty estimators by combining several small counties into a single population centroid. The increase in error due to this simplification will be small if the areas are 100 miles or more away from the detonation and if a number of weapons appear to be affecting all counties similarly. A modified PFP can be calculated as described below from data given in Table B.1 for the individual counties. The percentages given are used to calculate the number of people in each category. The number of people in a given category for each county is then summed to obtain a total for that category for the entire group of counties. After the sum in each category has been obtained, the percentage of the total population of the county group for each category is determined.

As an example, consider the combination of Lee, Scott, and Wise counties in the western end of Virginia. These counties are in geographical proximity, and none have a population exceeding 100,000. The populations and profiles from Table B.1 are as follows:

Lee: 19,038; 0; 13; 44; 7; 36.
Scott: 25,659; 0; 6; 33; 7; 54.
Wise: 35,010; 0; 0; 14; 18; 68.

From these numbers, the number of people in each category in each county is calculated by applying the percentages to the total population in each county. The results are as follows:

Lee: 0; 2,475; 8,377; 1,333; 6,854.

Scott: 0; 1,540; 8,467; 1,796; 13,856.

Wise: 0; 0; 4,901; 6,302; 23,807.

The total populations and the population in each category are now added to obtain the population distribution for the three counties:

Lee-Scott-Wise: 79,707; 0; 4,015; 21,745; 9,431; 44,517.

The percentages in each protection category are now calculated to determine the PFP for the county group:

Lee-Scott-Wise: 79,707; 0; 5; 27; 12; 56.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

A method has been developed for manual (noncomputer) estimation of fallout casualties when information on nuclear detonations and on upper wind conditions is given and when all nuclear detonations occur within a few hours of each other. If the weapons are delivered over a period of several days or more, the tables given here for 7-d exposure could be applied with certain procedures that will not be described here.

This method is simple and adaptable to large attacks in which several weapons affect a given area. The calculation can be simplified by combining counties into groups of counties, when the counties are 100 miles or more downwind from the detonations. The time required to make the estimations can be reduced by assigning more than one person to the task and by appropriately dividing the work among the estimators. The method is compatible with previously developed manual techniques for estimating initial casualties caused by the effects of weapons.

3.2 Recommendations

3.2.1 Calculation of fallout patterns

A computerized mathematical model should be developed to compute and plot hotlines from the DFUS data and a standardized hypothetical attack, such as the CRP-2B attack. The computer-calculated 7-d radiation exposure should be determined at several locations for several wind conditions and compared with the manual estimate of the 7-d radiation exposure. These comparisons would serve as an indication of the degree of error introduced by using manual techniques.

It was intended at the initiation of this project that such calculations would be made. A theoretical model was developed for computer mapping of hotlines based on DFUS data, but the computer program was not developed because it became apparent that the magnitude of this effort was beyond the scope of this project. The more urgent requirements for

the project, such as the development of the PFPs and the method of estimating casualties, were completed instead.

3.2.2 Extended attacks

A report should be prepared to describe methods for manual estimation of fallout casualties for attacks that are delivered over a period of days or weeks rather than in one day. Such attacks may become increasingly probable within the next five years in view of increased submarine missile deployment, developments in mobile land-based intercontinental ballistic missiles, and effective CRP. The methods given in this report can be applied for such extended attacks with the addition of another set of tables.

Appendix A

ESTIMATES OF SEVEN-DAY FREE-FIELD RADIATION EXPOSURES FROM FALLOUT FROM NUCLEAR WEAPONS

Appendix A

ESTIMATES OF SEVEN-DAY FREE-FIELD RADIATION EXPOSURES FROM FALLOUT FROM NUCLEAR WEAPONS

This appendix consists of 21 tables and seven figures for use in estimating fallout exposures. Tables A.1 through A.21 provide estimates of the 7-d cumulative radiation exposures in roentgens due to fallout from nuclear detonations. The lefthand column indicates the distance upwind in miles along the hotline from the county to the population centroid detonation. The first row indicates the distance crosswind in miles, which is measured at right angles from the hotline and at right angles to the streamlines in the vicinity. The streamlines indicate the direction of flow of the effective fallout winds. The hotline is the streamline that passes through the detonation point.

There are three sets of tables--one each for small, medium, and large weapons respectively [1, 5, and 20 megatons (MT)]. In each set there are seven tables corresponding to average effective fallout wind velocities of 5, 10, 20, 30, 40, 50, and 60 mph. When the fallout covers a large area, the numbers for a given wind condition and weapon size may occupy several pages.

The cumulative radiation exposures are given for a 7-d period in order to correspond with the "Penalty" table, shown in Appendix C (Table C.1). The exposure periods considered in this table are one week, one month, and four months. The radiation exposures in Tables A.1 through A.3 can be converted to 14-, 30-, and 120-d exposures using Figs. A.1, A.2, and A.3 respectively. The time fallout arrives at a given location after the detonation is first calculated by dividing the downwind distance by the average effective fallout wind speed.* Time of arrival of the fallout is located on the x-axis of the appropriate figure, and the y-value is read off the curve. This y-value and the 7-d radiation exposure are multiplied to obtain the exposure for the longer period of time. In

*The cloud radius may have to be taken into account if it is significant compared to the downwind distance.

all cases the period of exposure begins from the time the fallout arrives at a given location, not from the time of the detonation.

The estimates of radiation exposure were calculated using the WSEG-10 model* for fallout deposition as modified by the National Academy of Sciences. A shear wind of 0.2 mph per kilofoot of cloud height was assumed in all cases.

The K-factor (called "area-integral" in The Effects of Nuclear Weapons**) per kiloton of fission yield is defined by

$$K = \int_{area} R_o dA \quad ,$$

where R_o is the 1-h dose rate over an element of area dA and the product is integrated over the entire area covered by the fallout. For the tables prepared here, the K-factor was taken to be 2000 R/h • sq mile • kT fission. The Defense Civil Preparedness Agency uses 1930 for the K-factor, as recommended by the National Academy of Sciences.

The radioactivity is assumed to decay with time according to $t^{-1.2}$, where t is the time in hours after the detonation. Four isometric drawings in Figs. A.4 through A.7 show the 7-d exposure for a large weapon for wind speeds of 5, 10, 20, and 60 mph.

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*M. Polan, An Analysis of the Fallout Prediction Models Presented at the USNRDL-DASA Fallout Symposium of September 1962, Volume 1: Analysis, Comparison and Classification of Models, Ford Instrument Company, Division of Sperry Rand Corporation, Sept. 8, 1966.

**S. Glasstone and P. Dolan (Eds.), The Effects of Nuclear Weapons, 3rd ed., U.S. Department of Defense and U.S. Department of Energy, 1977.

Table A.1. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 5 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	19	1	0	0	0	0	0	0	0	0	0	0	0	0
0	6297	1058	5	0	0	0	0	0	0	0	0	0	0	0
5	5936	2860	320	8	0	0	0	0	0	0	0	0	0	0
10	3329	2232	673	91	6	0	0	0	0	0	0	0	0	0
15	2135	1634	733	193	30	3	0	0	0	0	0	0	0	0
20	1433	1188	677	265	71	13	2	0	0	0	0	0	0	0
25	995	868	576	290	111	32	7	1	0	0	0	0	0	0
30	711	641	470	280	135	53	17	4	1	0	0	0	0	0
35	519	479	376	251	142	69	28	10	3	1	0	0	0	0
40	386	362	298	216	137	77	38	16	6	2	1	0	0	0
45	291	276	236	181	125	78	44	22	10	4	1	0	0	0
50	223	213	187	150	110	74	46	26	13	6	3	1	0	0
55	172	166	148	123	95	68	45	28	16	9	4	2	1	0
60	134	130	118	101	81	61	43	28	18	10	6	3	1	1
65	105	102	94	82	68	53	39	28	18	12	7	4	2	1
70	83	81	76	67	57	46	35	26	18	12	8	5	3	1
75	66	65	61	55	47	39	31	24	17	12	8	5	3	2
80	53	52	49	45	39	33	27	21	16	12	8	6	4	2
85	43	42	40	37	33	28	23	19	15	11	8	6	4	3
90	34	34	32	30	27	24	20	17	13	10	8	6	4	3
95	28	27	26	25	22	20	17	14	12	9	7	5	4	3
100	23	22	22	20	19	17	15	12	10	8	7	5	4	3
110	15	15	14	14	13	12	10	9	8	7	5	4	3	3
120	10	10	10	9	9	8	7	7	6	5	4	4	3	2
140	5	5	5	4	4	4	4	3	3	3	2	2	2	2
160	2	2	2	2	2	2	2	2	2	2	1	1	1	1

Table A.2. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 10 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	4	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4361	206	0	0	0	0	0	0	0	0	0	0	0	0
5	5521	1102	9	0	0	0	0	0	0	0	0	0	0	0
10	3709	1379	71	1	0	0	0	0	0	0	0	0	0	0
15	2634	1333	173	6	0	0	0	0	0	0	0	0	0	0
20	1950	1187	267	22	1	0	0	0	0	0	0	0	0	0
25	1494	1022	327	49	3	0	0	0	0	0	0	0	0	0
30	1194	876	346	73	8	1	0	0	0	0	0	0	0	0
35	965	747	347	97	15	2	0	0	0	0	0	0	0	0
40	788	637	336	116	26	4	0	0	0	0	0	0	0	0
45	650	543	317	129	37	7	1	0	0	0	0	0	0	0
50	540	463	293	136	47	12	2	0	0	0	0	0	0	0
55	452	397	267	138	55	17	4	1	0	0	0	0	0	0
60	382	340	242	137	61	22	6	1	0	0	0	0	0	0
65	324	293	217	132	65	27	9	2	1	0	0	0	0	0
70	276	253	194	125	68	31	12	4	1	0	0	0	0	0
75	237	219	173	117	68	34	14	5	2	0	0	0	0	0
80	204	190	154	109	67	36	17	7	2	1	0	0	0	0
85	176	166	137	100	65	37	19	8	3	1	0	0	0	0
90	153	145	122	92	62	37	20	10	4	2	1	0	0	0
95	133	127	109	84	59	37	21	11	5	2	1	0	0	0
100	116	111	97	77	55	36	22	12	6	3	1	0	0	0
105	102	98	86	69	52	35	22	13	7	3	1	1	0	0
110	90	86	77	63	48	34	22	13	7	4	2	1	0	0
115	79	76	68	57	44	32	22	13	8	4	2	1	0	0
120	70	67	61	52	41	30	21	14	8	5	2	1	1	0
125	61	60	54	47	38	29	20	14	9	5	3	1	1	0
130	54	53	49	42	34	27	19	13	9	5	3	2	1	0
135	48	47	43	38	32	25	19	13	9	6	3	2	1	1
140	43	42	39	34	29	23	18	13	9	6	4	2	1	1
150	34	33	31	28	24	20	16	12	8	6	4	2	1	1
160	27	27	25	23	20	17	14	11	8	6	4	3	2	1
170	22	21	20	19	17	14	12	9	7	5	4	3	2	1
180	18	17	17	15	14	12	10	8	7	5	4	3	2	1
200	12	11	11	10	9	8	7	6	5	4	3	3	2	1
250	4	4	4	4	4	3	3	3	3	2	2	2	1	1
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
90	1	0	0	0	0	0	0	0	0	0	0	0	0	0
95	1	0	0	0	0	0	0	0	0	0	0	0	0	0
100	1	1	0	0	0	0	0	0	0	0	0	0	0	0
105	2	1	0	0	0	0	0	0	0	0	0	0	0	0
110	3	1	1	0	0	0	0	0	0	0	0	0	0	0
115	3	2	1	0	0	0	0	0	0	0	0	0	0	0
120	4	2	1	1	0	0	0	0	0	0	0	0	0	0
125	5	3	1	1	0	0	0	0	0	0	0	0	0	0
130	6	3	2	1	0	0	0	0	0	0	0	0	0	0
135	7	4	2	1	1	0	0	0	0	0	0	0	0	0
140	7	5	3	2	1	0	0	0	0	0	0	0	0	0
145	8	5	3	2	1	1	0	0	0	0	0	0	0	0
150	9	6	4	2	1	1	0	0	0	0	0	0	0	0
155	9	6	4	3	2	1	1	0	0	0	0	0	0	0
160	10	7	5	3	2	1	1	0	0	0	0	0	0	0
165	10	7	5	3	2	1	1	0	0	0	0	0	0	0
170	11	8	5	4	2	2	1	1	0	0	0	0	0	0
175	11	8	6	4	3	2	1	1	0	0	0	0	0	0
180	11	8	6	4	3	2	1	1	1	0	0	0	0	0
185	11	8	6	4	3	2	1	1	1	0	0	0	0	0
190	11	8	6	5	3	2	2	1	1	0	0	0	0	0
195	11	8	6	5	3	2	2	1	1	1	0	0	0	0
200	11	8	6	5	4	3	2	1	1	1	0	0	0	0
210	11	8	7	5	4	3	2	2	1	1	1	0	0	0
220	10	8	6	5	4	3	2	2	1	1	1	0	0	0
230	9	8	6	5	4	3	2	2	1	1	1	1	0	0
240	9	7	6	5	4	3	2	2	1	1	1	1	0	0
260	7	6	5	4	4	3	2	2	2	1	1	1	1	0
280	6	5	5	4	3	3	2	2	2	1	1	1	1	1
300	5	4	4	3	3	2	2	2	2	1	1	1	1	1
350	3	2	2	2	2	2	1	1	1	1	1	1	1	1

Table A.3. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 20 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2546	24	0	0	0	0	0	0	0	0	0	0	0	0
5	4043	190	0	0	0	0	0	0	0	0	0	0	0	0
10	3197	396	1	0	0	0	0	0	0	0	0	0	0	0
15	2563	561	6	0	0	0	0	0	0	0	0	0	0	0
20	2090	648	19	0	0	0	0	0	0	0	0	0	0	0
25	1731	674	40	0	0	0	0	0	0	0	0	0	0	0
30	1454	667	64	1	0	0	0	0	0	0	0	0	0	0
35	1235	642	90	3	0	0	0	0	0	0	0	0	0	0
40	1060	607	114	7	0	0	0	0	0	0	0	0	0	0
45	918	568	135	12	0	0	0	0	0	0	0	0	0	0
50	801	528	151	19	1	0	0	0	0	0	0	0	0	0
55	708	489	161	25	2	0	0	0	0	0	0	0	0	0
60	632	453	166	31	3	0	0	0	0	0	0	0	0	0
65	566	419	169	37	4	0	0	0	0	0	0	0	0	0
70	509	387	170	43	6	1	0	0	0	0	0	0	0	0
75	458	357	169	48	8	1	0	0	0	0	0	0	0	0
80	414	330	166	53	11	1	0	0	0	0	0	0	0	0
85	375	304	163	57	13	2	0	0	0	0	0	0	0	0
90	340	281	158	61	16	3	0	0	0	0	0	0	0	0
95	309	259	153	64	19	4	1	0	0	0	0	0	0	0
100	282	240	147	65	21	5	1	0	0	0	0	0	0	0
105	257	221	141	67	23	6	1	0	0	0	0	0	0	0
110	235	205	135	67	25	7	2	0	0	0	0	0	0	0
115	216	190	129	68	27	9	2	0	0	0	0	0	0	0
120	198	176	122	67	29	10	3	1	0	0	0	0	0	0
125	182	163	116	66	30	11	3	1	0	0	0	0	0	0
130	168	151	110	65	31	12	4	1	0	0	0	0	0	0
135	155	140	104	64	32	13	5	1	0	0	0	0	0	0
140	143	130	99	62	33	14	5	2	0	0	0	0	0	0
145	132	121	93	61	33	15	6	2	1	0	0	0	0	0
150	122	113	88	59	33	16	6	2	1	0	0	0	0	0
155	113	105	83	57	33	17	7	3	1	0	0	0	0	0
160	105	98	79	55	33	17	8	3	1	0	0	0	0	0
165	98	91	74	53	33	18	8	3	1	0	0	0	0	0
170	91	85	70	50	32	18	9	4	1	0	0	0	0	0
175	84	79	66	48	31	18	9	4	2	1	0	0	0	0
180	79	74	62	46	31	18	10	4	2	1	0	0	0	0
190	68	65	55	42	29	18	10	5	2	1	0	0	0	0
200	60	57	49	39	28	18	11	6	3	1	0	0	0	0
210	52	50	44	35	26	17	11	6	3	1	1	0	0	0
220	46	44	39	32	24	17	11	6	3	2	1	0	0	0
230	40	39	35	29	22	16	11	7	4	2	1	0	0	0
240	35	34	31	26	21	15	10	7	4	2	1	1	0	0
260	28	27	25	21	17	13	10	7	4	3	1	1	0	0
280	22	21	20	17	15	12	9	6	4	3	2	1	1	0
300	17	17	16	14	12	10	8	6	4	3	2	1	1	0
350	10	10	9	9	8	7	5	4	3	3	2	1	1	1
400	6	6	6	5	5	4	4	3	3	2	2	1	1	1
500	2	2	2	2	2	2	2	1	1	1	1	1	1	1

Table A.4. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 30 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1777	4	0	0	0	0	0	0	0	0	0	0	0	0
5	3071	40	0	0	0	0	0	0	0	0	0	0	0	0
10	2623	110	0	0	0	0	0	0	0	0	0	0	0	0
15	2240	206	0	0	0	0	0	0	0	0	0	0	0	0
20	1924	301	1	0	0	0	0	0	0	0	0	0	0	0
25	1665	372	4	0	0	0	0	0	0	0	0	0	0	0
30	1452	416	10	0	0	0	0	0	0	0	0	0	0	0
35	1275	438	18	0	0	0	0	0	0	0	0	0	0	0
40	1127	446	28	0	0	0	0	0	0	0	0	0	0	0
45	1003	444	38	1	0	0	0	0	0	0	0	0	0	0
50	897	435	50	1	0	0	0	0	0	0	0	0	0	0
55	806	423	61	2	0	0	0	0	0	0	0	0	0	0
60	728	408	72	4	0	0	0	0	0	0	0	0	0	0
65	659	391	82	6	0	0	0	0	0	0	0	0	0	0
70	600	373	90	8	0	0	0	0	0	0	0	0	0	0
75	547	356	98	11	1	0	0	0	0	0	0	0	0	0
80	501	338	104	14	1	0	0	0	0	0	0	0	0	0
85	463	321	107	17	1	0	0	0	0	0	0	0	0	0
90	430	305	109	20	2	0	0	0	0	0	0	0	0	0
95	399	290	111	22	2	0	0	0	0	0	0	0	0	0
100	371	275	112	25	3	0	0	0	0	0	0	0	0	0
105	345	261	112	28	4	0	0	0	0	0	0	0	0	0
110	322	247	112	30	5	0	0	0	0	0	0	0	0	0
115	300	234	112	32	6	1	0	0	0	0	0	0	0	0
120	280	222	110	34	7	1	0	0	0	0	0	0	0	0
125	262	211	109	36	9	1	0	0	0	0	0	0	0	0
130	246	200	107	38	9	1	0	0	0	0	0	0	0	0
135	230	189	105	40	10	2	0	0	0	0	0	0	0	0
140	216	179	103	41	11	2	0	0	0	0	0	0	0	0
145	203	170	101	42	12	3	0	0	0	0	0	0	0	0
150	190	161	99	43	14	3	0	0	0	0	0	0	0	0
155	179	153	96	44	15	4	1	0	0	0	0	0	0	0
160	169	145	93	44	16	4	1	0	0	0	0	0	0	0
165	159	138	90	44	17	5	1	0	0	0	0	0	0	0
170	150	131	88	45	17	5	1	0	0	0	0	0	0	0
175	141	124	85	45	18	6	1	0	0	0	0	0	0	0
180	134	118	82	44	19	6	2	0	0	0	0	0	0	0
185	126	112	79	44	20	7	2	0	0	0	0	0	0	0
190	119	107	77	44	20	7	2	1	0	0	0	0	0	0
195	113	102	74	43	21	9	2	1	0	0	0	0	0	0
200	107	97	71	43	21	9	3	1	0	0	0	0	0	0
210	96	88	66	41	22	9	3	1	0	0	0	0	0	0
220	87	79	61	40	22	10	4	1	0	0	0	0	0	0
230	78	72	57	38	22	11	4	2	0	0	0	0	0	0
240	71	66	53	36	22	11	5	2	1	0	0	0	0	0
250	64	60	49	35	21	12	5	2	1	0	0	0	0	0
260	58	55	45	33	21	12	6	3	1	0	0	0	0	0
280	48	46	39	29	20	12	7	3	1	1	0	0	0	0
300	40	38	33	26	18	12	7	4	2	1	0	0	0	0
320	34	32	28	23	17	11	7	4	2	1	0	0	0	0
340	28	27	24	20	15	11	7	4	2	1	1	0	0	0
360	24	23	21	17	14	10	7	4	3	1	1	0	0	0
380	20	20	18	15	12	9	7	4	3	2	1	0	0	0
400	17	17	15	13	11	9	6	4	3	2	1	1	0	0
450	12	11	11	9	8	7	5	4	3	2	1	1	0	0
500	8	8	7	7	6	5	4	3	2	2	1	1	1	0
600	4	4	4	3	3	3	2	2	2	1	1	1	1	0

Table A.5. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 40 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1361	1	0	0	0	0	0	0	0	0	0	0	0	0
5	2452	9	0	0	0	0	0	0	0	0	0	0	0	0
10	2185	30	0	0	0	0	0	0	0	0	0	0	0	0
15	1940	69	0	0	0	0	0	0	0	0	0	0	0	0
20	1723	124	0	0	0	0	0	0	0	0	0	0	0	0
25	1535	183	0	0	0	0	0	0	0	0	0	0	0	0
30	1373	236	1	0	0	0	0	0	0	0	0	0	0	0
35	1233	276	3	0	0	0	0	0	0	0	0	0	0	0
40	1112	304	6	0	0	0	0	0	0	0	0	0	0	0
45	1007	321	10	0	0	0	0	0	0	0	0	0	0	0
50	916	330	15	0	0	0	0	0	0	0	0	0	0	0
55	836	333	21	0	0	0	0	0	0	0	0	0	0	0
60	765	332	27	0	0	0	0	0	0	0	0	0	0	0
65	703	328	33	1	0	0	0	0	0	0	0	0	0	0
70	647	322	40	1	0	0	0	0	0	0	0	0	0	0
75	598	315	46	2	0	0	0	0	0	0	0	0	0	0
80	554	307	52	3	0	0	0	0	0	0	0	0	0	0
85	514	298	58	4	0	0	0	0	0	0	0	0	0	0
90	478	288	63	5	0	0	0	0	0	0	0	0	0	0
95	445	278	68	6	0	0	0	0	0	0	0	0	0	0
100	416	268	72	8	0	0	0	0	0	0	0	0	0	0
105	389	258	76	10	1	0	0	0	0	0	0	0	0	0
110	365	248	78	11	1	0	0	0	0	0	0	0	0	0
115	344	239	80	13	1	0	0	0	0	0	0	0	0	0
120	325	230	81	14	1	0	0	0	0	0	0	0	0	0
125	308	221	82	16	2	0	0	0	0	0	0	0	0	0
130	291	213	83	17	2	0	0	0	0	0	0	0	0	0
135	276	205	84	19	2	0	0	0	0	0	0	0	0	0
140	261	197	84	20	3	0	0	0	0	0	0	0	0	0
145	248	189	84	22	3	0	0	0	0	0	0	0	0	0
150	235	182	84	23	4	0	0	0	0	0	0	0	0	0
155	223	174	83	24	4	0	0	0	0	0	0	0	0	0
160	212	168	83	25	5	1	0	0	0	0	0	0	0	0
165	202	161	82	27	6	1	0	0	0	0	0	0	0	0
170	192	155	81	28	6	1	0	0	0	0	0	0	0	0
175	183	149	80	29	7	1	0	0	0	0	0	0	0	0
180	174	143	79	29	7	1	0	0	0	0	0	0	0	0
185	166	137	78	30	8	1	0	0	0	0	0	0	0	0
190	158	132	77	31	9	2	0	0	0	0	0	0	0	0
195	151	127	75	32	9	2	0	0	0	0	0	0	0	0
200	144	122	74	32	10	2	0	0	0	0	0	0	0	0
205	137	117	72	32	11	2	0	0	0	0	0	0	0	0
210	131	113	71	33	11	3	1	0	0	0	0	0	0	0
220	120	104	68	33	12	3	1	0	0	0	0	0	0	0
230	110	96	65	33	13	4	1	0	0	0	0	0	0	0
240	101	89	62	33	14	5	1	0	0	0	0	0	0	0
250	93	83	59	33	15	5	1	0	0	0	0	0	0	0
260	85	77	56	32	15	6	2	0	0	0	0	0	0	0
270	79	71	53	32	16	6	2	1	0	0	0	0	0	0
280	73	66	50	31	16	7	2	1	0	0	0	0	0	0
300	62	57	44	29	16	8	3	1	0	0	0	0	0	0
320	53	49	40	27	16	8	4	1	0	0	0	0	0	0
340	46	43	35	25	16	9	4	2	1	0	0	0	0	0
360	40	38	31	23	15	9	5	2	1	0	0	0	0	0
380	35	33	28	21	15	9	5	2	1	0	0	0	0	0
400	30	29	25	19	14	9	5	3	1	1	0	0	0	0
450	22	21	19	15	12	8	5	3	2	1	0	0	0	0
500	16	15	14	12	9	7	5	3	2	1	1	0	0	0
600	9	9	8	7	6	5	4	3	2	1	1	1	0	0
700	5	5	5	4	4	3	3	2	2	1	1	1	0	0
800	3	3	3	3	2	2	2	2	1	1	1	1	0	0

Table A.6. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 50 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
a	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1102	0	0	0	0	0	0	0	0	0	0	0	0	0
5	2033	2	0	0	0	0	0	0	0	0	0	0	0	0
10	1859	8	0	0	0	0	0	0	0	0	0	0	0	0
15	1693	21	0	0	0	0	0	0	0	0	0	0	0	0
20	1539	46	0	0	0	0	0	0	0	0	0	0	0	0
25	1399	80	0	0	0	0	0	0	0	0	0	0	0	0
30	1275	120	0	0	0	0	0	0	0	0	0	0	0	0
35	1164	158	0	0	0	0	0	0	0	0	0	0	0	0
40	1066	192	1	0	0	0	0	0	0	0	0	0	0	0
45	978	218	2	0	0	0	0	0	0	0	0	0	0	0
50	901	238	4	0	0	0	0	0	0	0	0	0	0	0
55	831	251	7	0	0	0	0	0	0	0	0	0	0	0
60	769	259	10	0	0	0	0	0	0	0	0	0	0	0
65	714	264	13	0	0	0	0	0	0	0	0	0	0	0
70	664	265	17	0	0	0	0	0	0	0	0	0	0	0
75	618	265	21	0	0	0	0	0	0	0	0	0	0	0
90	577	263	25	0	0	0	0	0	0	0	0	0	0	0
85	540	260	29	1	0	0	0	0	0	0	0	0	0	0
90	506	256	33	1	0	0	0	0	0	0	0	0	0	0
95	475	251	37	2	0	0	0	0	0	0	0	0	0	0
100	447	246	41	2	0	0	0	0	0	0	0	0	0	0
105	421	240	45	3	0	0	0	0	0	0	0	0	0	0
110	397	234	48	3	0	0	0	0	0	0	0	0	0	0
115	375	228	51	4	0	0	0	0	0	0	0	0	0	0
120	354	222	54	5	0	0	0	0	0	0	0	0	0	0
125	335	215	57	6	0	0	0	0	0	0	0	0	0	0
130	318	209	59	7	0	0	0	0	0	0	0	0	0	0
135	301	202	61	8	1	0	0	0	0	0	0	0	0	0
140	287	196	63	9	1	0	0	0	0	0	0	0	0	0
145	274	190	64	10	1	0	0	0	0	0	0	0	0	0
150	262	185	65	11	1	0	0	0	0	0	0	0	0	0
155	250	179	65	12	1	0	0	0	0	0	0	0	0	0
160	240	174	66	13	1	0	0	0	0	0	0	0	0	0
165	229	168	66	14	2	0	0	0	0	0	0	0	0	0
170	219	163	67	15	2	0	0	0	0	0	0	0	0	0
175	210	158	67	16	2	0	0	0	0	0	0	0	0	0
180	201	153	67	17	2	0	0	0	0	0	0	0	0	0
185	193	148	67	18	3	0	0	0	0	0	0	0	0	0
190	185	143	67	19	3	0	0	0	0	0	0	0	0	0
195	178	139	66	19	3	0	0	0	0	0	0	0	0	0
200	171	135	66	20	4	0	0	0	0	0	0	0	0	0
205	164	130	66	21	4	1	0	0	0	0	0	0	0	0
210	157	126	65	22	5	1	0	0	0	0	0	0	0	0
220	145	118	64	23	5	1	0	0	0	0	0	0	0	0
230	134	111	62	24	6	1	0	0	0	0	0	0	0	0
240	125	104	61	25	7	1	0	0	0	0	0	0	0	0
250	116	98	59	26	8	2	0	0	0	0	0	0	0	0
260	107	92	57	26	9	2	0	0	0	0	0	0	0	0
270	100	86	55	26	9	2	0	0	0	0	0	0	0	0
280	93	81	53	27	10	3	1	0	0	0	0	0	0	0
300	81	72	49	27	11	4	1	0	0	0	0	0	0	0
320	71	63	45	26	12	4	1	0	0	0	0	0	0	0
340	62	56	42	25	13	5	2	0	0	0	0	0	0	0
360	55	50	38	24	13	6	2	1	0	0	0	0	0	0
380	48	44	35	23	13	6	3	1	0	0	0	0	0	0
400	43	40	32	22	13	7	3	1	0	0	0	0	0	0
450	32	30	25	19	12	7	4	2	1	0	0	0	0	0
500	24	23	20	16	11	7	4	2	1	0	0	0	0	0
550	19	18	16	13	10	7	4	2	1	1	0	0	0	0
600	14	14	13	11	8	6	4	3	2	1	0	0	0	0
700	9	9	8	7	6	5	3	2	2	1	1	0	0	0
800	6	5	5	5	4	3	3	2	2	1	1	0	0	0
900	4	4	3	3	3	2	2	2	1	1	1	1	0	0
1000	2	2	2	2	2	2	1	1	1	1	1	0	0	0

Table A.7. Estimated radiation exposures from fallout, assuming small yield weapon, 7-d exposure (R), and effective fallout wind speed of 60 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	926	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1733	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1613	2	0	0	0	0	0	0	0	0	0	0	0	0
15	1494	6	0	0	0	0	0	0	0	0	0	0	0	0
20	1380	15	0	0	0	0	0	0	0	0	0	0	0	0
25	1275	32	0	0	0	0	0	0	0	0	0	0	0	0
30	1178	54	0	0	0	0	0	0	0	0	0	0	0	0
35	1089	81	0	0	0	0	0	0	0	0	0	0	0	0
40	1009	110	0	0	0	0	0	0	0	0	0	0	0	0
45	936	137	0	0	0	0	0	0	0	0	0	0	0	0
50	871	160	1	0	0	0	0	0	0	0	0	0	0	0
55	811	180	2	0	0	0	0	0	0	0	0	0	0	0
60	757	194	3	0	0	0	0	0	0	0	0	0	0	0
65	708	205	5	0	0	0	0	0	0	0	0	0	0	0
70	663	212	7	0	0	0	0	0	0	0	0	0	0	0
75	622	217	9	0	0	0	0	0	0	0	0	0	0	0
80	585	220	12	0	0	0	0	0	0	0	0	0	0	0
85	550	221	14	0	0	0	0	0	0	0	0	0	0	0
90	519	221	17	0	0	0	0	0	0	0	0	0	0	0
95	490	219	20	0	0	0	0	0	0	0	0	0	0	0
100	463	218	23	1	0	0	0	0	0	0	0	0	0	0
105	438	215	25	1	0	0	0	0	0	0	0	0	0	0
110	416	212	28	1	0	0	0	0	0	0	0	0	0	0
115	394	209	31	[illegible]	0	0	0	0	0	0	0	0	0	0
120	375	205	34	2	0	0	0	0	0	0	0	0	0	0
125	356	201	36	2	0	0	0	0	0	0	0	0	0	0
130	339	197	39	3	0	0	0	0	0	0	0	0	0	0
135	323	193	41	3	0	0	0	0	0	0	0	0	0	0
140	308	188	43	4	0	0	0	0	0	0	0	0	0	0
145	294	184	45	4	0	0	0	0	0	0	0	0	0	0
150	281	180	47	5	0	0	0	0	0	0	0	0	0	0
155	268	175	49	6	0	0	0	0	0	0	0	0	0	0
160	257	171	50	7	0	0	0	0	0	0	0	0	0	0
165	246	166	52	7	0	0	0	0	0	0	0	0	0	0
170	236	162	52	8	1	0	0	0	0	0	0	0	0	0
175	228	158	53	9	1	0	0	0	0	0	0	0	0	0
180	219	154	54	9	1	0	0	0	0	0	0	0	0	0
185	211	150	54	10	1	0	0	0	0	0	0	0	0	0
190	203	146	55	11	1	0	0	0	0	0	0	0	0	0
195	196	143	55	11	1	0	0	0	0	0	0	0	0	0
200	189	139	55	12	1	0	0	0	0	0	0	0	0	0
205	182	135	55	13	2	0	0	0	0	0	0	0	0	0
210	176	132	56	13	2	0	0	0	0	0	0	0	0	0
215	170	128	56	14	2	0	0	0	0	0	0	0	0	0
220	164	125	56	14	2	0	0	0	0	0	0	0	0	0
230	153	119	55	16	3	0	0	0	0	0	0	0	0	0
240	143	112	55	17	3	0	0	0	0	0	0	0	0	0
250	133	107	54	18	4	0	0	0	0	0	0	0	0	0
260	125	101	54	19	4	1	0	0	0	0	0	0	0	0
270	117	96	53	19	5	1	0	0	0	0	0	0	0	0
280	110	91	52	20	5	1	0	0	0	0	0	0	0	0
290	103	86	50	21	6	1	0	0	0	0	0	0	0	0
300	97	82	49	21	7	1	0	0	0	0	0	0	0	0
320	86	73	47	22	8	2	0	0	0	0	0	0	0	0
340	76	66	44	22	9	2	1	0	0	0	0	0	0	0
360	68	60	41	22	9	3	1	0	0	0	0	0	0	0
380	60	54	38	22	10	4	1	0	0	0	0	0	0	0
400	54	49	36	21	10	4	1	0	0	0	0	0	0	0
450	42	38	30	20	11	5	2	1	0	0	0	0	0	0
500	32	30	25	17	11	6	3	1	0	0	0	0	0	0
550	25	24	20	15	10	6	3	1	1	0	0	0	0	0
600	20	19	17	13	9	6	3	2	1	0	0	0	0	0
700	13	13	11	9	7	5	3	2	1	1	0	0	0	0
800	9	8	9	7	5	4	3	2	1	1	1	0	0	0
900	6	6	5	5	4	3	3	2	1	1	1	0	0	0
1000	4	4	4	3	3	3	2	2	1	1	1	0	0	0
1100	3	3	3	2	2	2	2	1	1	1	1	0	0	0

Table A.8. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 5 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	15	8	1	0	0	0	0	0	0	0	0	0	0	0
-5	1928	809	60	1	0	0	0	0	0	0	0	0	0	0
0	11673	7607	2105	247	12	0	0	0	0	0	0	0	0	0
5	12844	10128	4966	1514	287	34	2	0	0	0	0	0	0	0
10	8664	7416	4649	2135	718	177	32	4	0	0	0	0	0	0
15	6148	5458	3819	2105	915	313	85	18	3	0	0	0	0	0
20	4451	4060	3082	1947	1024	448	163	49	12	3	0	0	0	0
25	3284	3056	2462	1718	1038	543	246	97	33	10	2	1	0	0
30	2465	2327	1959	1470	984	587	312	148	62	24	8	2	1	0
35	1878	1792	1558	1234	891	586	351	191	95	43	18	7	2	1
40	1449	1394	1242	1025	783	554	363	220	124	64	31	14	6	2
45	1131	1095	994	846	676	506	355	234	144	83	45	23	11	5
50	891	867	799	697	576	451	334	234	156	98	58	33	18	9
55	708	691	645	574	487	395	305	225	159	107	68	42	24	14
60	567	555	523	472	410	342	273	210	155	110	75	49	31	19
65	457	449	425	389	344	293	242	192	147	109	78	54	36	23
70	370	364	348	322	288	251	211	172	137	105	78	56	39	27
75	301	297	285	266	242	213	183	153	124	98	76	57	41	29
80	247	244	235	221	202	181	158	135	112	91	72	55	42	31
85	203	200	194	183	170	154	136	118	100	83	67	53	41	31
90	167	165	161	153	142	130	117	102	88	74	61	50	40	31
95	138	137	133	127	120	110	100	89	77	66	56	46	37	30
100	115	114	111	107	101	93	85	77	68	59	50	42	35	28
105	96	95	93	89	85	79	73	66	59	52	45	38	32	27
110	80	79	78	75	71	67	62	57	51	46	40	34	29	25
115	67	66	65	63	60	57	53	49	44	40	35	31	27	23
120	56	56	55	53	51	48	45	42	38	35	31	27	24	21
125	47	47	46	45	43	41	39	36	33	30	27	24	21	19
130	40	39	39	38	37	35	33	31	29	26	24	21	19	17
135	33	33	33	32	31	30	28	27	25	23	21	19	17	15
140	28	28	28	27	26	25	24	23	21	20	18	17	15	13
150	20	20	20	20	19	18	18	17	16	15	14	13	12	11
160	15	15	14	14	14	13	13	12	12	11	10	10	9	8
180	8	8	8	8	7	7	7	7	6	6	6	6	5	5
200	4	4	4	4	4	4	4	4	4	3	3	3	3	3

Distance between GZ and county centroid (miles)	70	75	80	85	90	95	100	105	110	115	120	125	130	135
40	1	0	0	0	0	0	0	0	0	0	0	0	0	0
45	2	1	0	0	0	0	0	0	0	0	0	0	0	0
50	4	2	1	0	0	0	0	0	0	0	0	0	0	0
55	7	4	2	1	0	0	0	0	0	0	0	0	0	0
60	11	6	3	2	1	0	0	0	0	0	0	0	0	0
65	14	9	5	3	1	1	0	0	0	0	0	0	0	0
70	17	11	7	4	2	1	1	0	0	0	0	0	0	0
75	20	13	9	6	3	2	1	1	0	0	0	0	0	0
80	22	15	10	7	5	3	2	1	1	0	0	0	0	0
85	23	17	12	8	6	4	2	2	1	1	0	0	0	0
90	24	18	13	9	7	5	3	2	1	1	1	0	0	0
95	23	18	14	10	7	5	4	3	2	1	1	0	0	0
100	23	18	14	11	8	6	4	3	2	1	1	1	0	0
105	22	17	14	11	8	6	5	3	2	2	1	1	1	0
110	20	17	14	11	8	7	5	4	3	2	1	1	1	1
115	19	16	13	11	8	7	5	4	3	2	2	1	1	1
120	18	15	12	10	8	7	5	4	3	2	2	1	1	1
125	16	14	12	10	8	7	5	4	3	3	2	2	1	1
130	15	13	11	9	8	6	5	4	3	3	2	2	1	1
135	13	12	10	8	7	6	5	4	3	3	2	2	1	1
140	12	10	9	8	7	6	5	4	3	3	2	2	1	1
150	9	8	7	7	6	5	4	4	3	3	2	2	1	1
160	7	7	6	5	5	4	4	3	3	2	2	2	1	1
180	5	4	4	3	3	3	3	2	2	2	2	1	1	1
200	3	3	2	2	2	2	2	2	1	1	1	1	1	1

Table A.9. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 10 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	4	1	0	0	0	0	0	0	0	0	0	0	0	0
-5	895	254	6	0	0	0	0	0	0	0	0	0	0	0
0	8962	4143	409	9	0	0	0	0	0	0	0	0	0	0
5	12010	7330	1666	141	4	0	0	0	0	0	0	0	0	0
10	9137	6440	2255	392	34	1	0	0	0	0	0	0	0	0
15	6947	5325	2398	635	99	9	0	0	0	0	0	0	0	0
20	5432	4406	2351	826	191	29	3	0	0	0	0	0	0	0
25	4339	3665	2209	950	291	64	10	1	0	0	0	0	0	0
30	3598	3114	2018	979	356	97	20	3	0	0	0	0	0	0
35	3026	2668	1828	974	403	130	33	6	1	0	0	0	0	0
40	2558	2292	1648	951	441	164	49	12	2	0	0	0	0	0
45	2174	1975	1479	914	466	196	68	19	5	1	0	0	0	0
50	1858	1707	1324	867	479	223	88	29	8	2	0	0	0	0
55	1595	1480	1182	813	481	245	108	41	13	4	1	0	0	0
60	1375	1287	1054	756	475	261	126	53	20	6	2	0	0	0
65	1191	1123	940	698	451	270	141	65	27	10	3	1	0	0
70	1036	982	837	642	442	274	153	76	34	14	5	2	0	0
75	904	862	746	587	420	273	161	86	42	19	8	3	1	0
80	791	758	666	536	396	268	166	95	49	24	10	4	2	1
85	695	668	594	488	370	260	169	101	56	29	14	6	2	1
90	612	591	531	444	345	250	168	106	62	34	17	8	4	1
95	541	524	474	403	320	238	166	108	66	38	20	10	5	2
100	479	465	425	365	296	226	162	110	70	42	24	13	6	3
105	425	414	381	331	273	213	157	109	72	45	27	15	8	4
110	378	369	342	301	251	200	151	108	74	48	29	17	10	5
115	337	329	307	273	231	187	144	106	74	50	32	19	11	6
120	301	295	276	247	212	174	136	103	74	51	33	21	13	7
125	270	264	248	224	194	162	129	99	73	51	35	23	14	8
130	242	237	224	203	178	150	121	95	71	51	36	24	15	10
135	217	213	202	185	163	139	114	90	69	51	36	25	17	11
140	195	192	182	168	149	128	107	86	67	50	37	26	18	12
145	175	173	165	152	137	119	100	81	64	49	37	26	18	12
150	158	156	149	139	125	109	93	77	62	48	36	27	19	13
155	143	141	135	126	114	101	87	72	59	46	36	27	19	14
160	129	127	122	115	105	93	80	68	56	45	35	26	20	14
165	117	115	111	104	96	86	75	64	53	43	34	26	20	14
170	106	105	101	95	88	79	69	60	50	41	33	26	20	15
175	96	95	92	87	80	73	64	56	47	39	32	25	19	15
180	87	86	83	79	73	67	60	52	44	37	30	24	19	15
185	79	78	76	72	67	62	55	48	42	35	29	24	19	15
190	72	71	69	66	62	57	51	45	39	33	28	23	18	14
195	65	65	63	60	57	52	47	42	37	31	26	22	18	14
200	60	59	57	55	52	48	44	39	34	30	25	21	17	14
210	49	49	48	46	44	41	37	34	30	26	22	19	16	13
220	41	41	40	39	37	34	32	29	26	23	20	17	15	12
230	34	34	34	32	31	29	27	25	23	20	18	15	13	11
240	29	29	28	27	26	25	23	21	19	18	16	14	12	10
260	20	20	20	19	19	18	17	16	15	13	12	11	10	8
280	14	14	14	14	13	13	12	12	11	10	9	8	8	7
300	10	10	10	10	10	9	9	9	8	8	7	6	6	5
350	5	5	5	4	4	4	4	4	4	4	3	3	3	3
400	2	2	2	2	2	2	2	2	2	2	2	2	2	1

Table A.9. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
90	1	0	0	0	0	0	0	0	0	0	0	0	0	0
95	1	0	0	0	0	0	0	0	0	0	0	0	0	0
100	1	1	0	0	0	0	0	0	0	0	0	0	0	0
105	2	1	0	0	0	0	0	0	0	0	0	0	0	0
110	3	1	1	0	0	0	0	0	0	0	0	0	0	0
115	3	2	1	0	0	0	0	0	0	0	0	0	0	0
120	4	2	1	1	0	0	0	0	0	0	0	0	0	0
125	5	3	1	1	0	0	0	0	0	0	0	0	0	0
130	6	3	2	1	0	0	0	0	0	0	0	0	0	0
135	7	4	2	1	1	0	0	0	0	0	0	0	0	0
140	7	5	3	2	1	0	0	0	0	0	0	0	0	0
145	8	5	3	2	1	1	0	0	0	0	0	0	0	0
150	9	6	4	2	1	1	0	0	0	0	0	0	0	0
155	9	6	4	3	2	1	1	0	0	0	0	0	0	0
160	10	7	5	3	2	1	1	0	0	0	0	0	0	0
165	10	7	5	3	2	1	1	0	0	0	0	0	0	0
170	11	8	5	4	2	2	1	1	0	0	0	0	0	0
175	11	8	6	4	3	2	1	1	0	0	0	0	0	0
180	11	8	6	4	3	2	1	1	1	0	0	0	0	0
185	11	8	6	4	3	2	1	1	1	0	0	0	0	0
190	11	8	6	5	3	2	2	1	1	0	0	0	0	0
195	11	8	6	5	3	2	2	1	1	1	0	0	0	0
200	11	8	6	5	4	3	2	1	1	1	0	0	0	0
210	11	8	7	5	4	3	2	2	1	1	1	0	0	0
220	10	8	6	5	4	3	2	2	1	1	1	0	0	0
230	9	8	6	5	4	3	2	2	1	1	1	1	0	0
240	9	7	6	5	4	3	2	2	1	1	1	1	0	0
260	7	6	5	4	4	3	2	2	2	1	1	1	1	0
280	6	5	5	4	3	3	2	2	2	1	1	1	1	1
300	5	4	4	3	3	2	2	2	2	1	1	1	1	1
350	3	2	2	2	2	2	1	1	1	1	1	1	1	1
400	1	1	1	1	1	1	1	1	1	1	1	1	0	0

Table A.10. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 20 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	279	55	0	0	0	0	0	0	0	0	0	0	0	0
0	5699	1748	50	0	0	0	0	0	0	0	0	0	0	0
5	9110	3819	281	4	0	0	0	0	0	0	0	0	0	0
10	7666	3958	545	20	0	0	0	0	0	0	0	0	0	0
15	6401	3786	783	57	1	0	0	0	0	0	0	0	0	0
20	5417	3508	953	109	5	0	0	0	0	0	0	0	0	0
25	4639	3206	1058	167	13	0	0	0	0	0	0	0	0	0
30	4013	2916	1118	227	24	1	0	0	0	0	0	0	0	0
35	3501	2649	1146	284	40	3	0	0	0	0	0	0	0	0
40	3078	2407	1151	336	60	7	0	0	0	0	0	0	0	0
45	2723	2189	1137	382	83	12	1	0	0	0	0	0	0	0
50	2423	1994	1111	419	107	19	2	0	0	0	0	0	0	0
55	2167	1819	1075	448	132	27	4	0	0	0	0	0	0	0
60	1952	1665	1033	466	153	37	6	1	0	0	0	0	0	0
65	1785	1539	986	470	166	44	9	1	0	0	0	0	0	0
70	1634	1423	940	471	179	52	11	2	0	0	0	0	0	0
75	1498	1317	894	469	190	60	14	3	0	0	0	0	0	0
80	1376	1220	850	466	200	68	18	4	1	0	0	0	0	0
85	1265	1131	807	460	209	76	22	5	1	0	0	0	0	0
90	1165	1049	765	452	217	84	26	7	1	0	0	0	0	0
95	1074	973	725	443	223	92	31	9	2	0	0	0	0	0
100	991	904	686	433	227	99	36	11	3	1	0	0	0	0
105	916	841	649	421	230	106	41	13	4	1	0	0	0	0
110	848	782	613	409	232	112	46	16	5	1	0	0	0	0
115	786	728	579	396	232	117	50	19	6	2	0	0	0	0
120	729	679	547	382	231	121	55	22	7	2	1	0	0	0
125	677	633	517	368	229	125	59	25	9	3	1	0	0	0
130	630	591	488	354	227	128	63	28	11	4	1	0	0	0
135	586	552	460	340	223	130	67	31	12	4	1	0	0	0
140	546	516	435	327	219	131	70	33	14	5	2	1	0	0
145	509	482	410	313	214	132	73	36	16	6	2	1	0	0
150	475	451	387	300	209	132	75	39	18	8	3	1	0	0
155	444	423	365	287	204	132	77	41	20	9	3	1	0	0
160	415	396	345	274	198	131	79	43	22	10	4	2	1	0
165	388	372	326	262	192	130	80	45	23	11	5	2	1	0
170	364	349	308	250	186	128	81	47	25	12	6	2	1	0
175	341	328	291	238	180	126	81	48	27	14	6	3	1	0
180	320	308	275	227	174	124	81	50	28	15	7	3	1	1
185	300	290	260	217	168	121	81	51	29	16	8	4	2	1
190	282	272	245	206	162	119	81	52	31	17	9	4	2	1
195	265	256	232	197	156	116	80	52	32	18	10	5	2	1
200	249	241	220	187	150	113	80	53	33	19	10	5	3	1
205	235	228	208	178	144	110	79	53	33	20	11	6	3	1
210	221	215	197	170	139	107	77	53	34	21	12	6	3	2
215	208	202	186	162	133	103	76	53	35	22	13	7	4	2
220	196	191	176	154	128	100	75	53	35	22	13	8	4	2
225	185	180	167	147	122	97	73	52	35	23	14	8	4	2
230	175	170	158	140	117	94	71	52	36	23	15	9	5	3
235	165	161	150	133	113	91	70	51	36	24	15	9	5	3
240	156	152	142	127	108	88	68	50	36	24	16	10	6	3
245	147	144	135	121	103	85	66	50	36	24	16	10	6	3
250	139	136	128	115	99	82	64	49	35	25	16	10	6	4
255	132	129	121	109	95	79	63	48	35	25	17	11	7	4
260	125	122	115	104	91	76	61	47	35	25	17	11	7	4

Table A.10. (Continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
265	118	116	109	99	87	73	59	46	34	25	17	12	7	5
270	112	110	104	95	93	70	57	45	34	25	17	12	8	5
280	100	99	94	86	76	65	54	43	33	25	18	12	8	5
290	90	89	85	78	70	60	50	41	32	24	18	13	9	6
300	81	80	76	71	64	55	47	38	31	24	18	13	9	6
310	73	72	69	64	58	51	44	36	29	23	17	13	9	6
320	66	65	63	59	53	47	41	34	28	22	17	13	9	7
330	60	59	57	53	49	43	38	32	26	21	17	13	9	7
340	54	53	52	49	45	40	35	30	25	20	16	13	9	7
360	44	44	43	40	37	34	30	26	22	18	15	12	9	7
380	37	36	35	34	31	29	26	23	20	17	14	11	9	7
400	30	30	29	28	26	24	22	20	17	15	12	10	8	7
450	19	19	19	18	17	16	15	14	12	11	9	8	7	6
500	12	12	12	12	11	11	10	9	8	8	7	6	5	5
550	8	8	8	8	7	7	7	6	6	5	5	4	4	4
600	5	5	5	5	5	5	5	4	4	4	3	3	3	3
700	2	2	2	2	2	2	2	2	2	2	2	2	2	1

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
205	1	0	0	0	0	0	0	0	0	0	0	0	0	0
210	1	0	0	0	0	0	0	0	0	0	0	0	0	0
215	1	0	0	0	0	0	0	0	0	0	0	0	0	0
220	1	0	0	0	0	0	0	0	0	0	0	0	0	0
225	1	1	0	0	0	0	0	0	0	0	0	0	0	0
230	1	1	0	0	0	0	0	0	0	0	0	0	0	0
235	2	1	0	0	0	0	0	0	0	0	0	0	0	0
240	2	1	0	0	0	0	0	0	0	0	0	0	0	0
245	2	1	1	0	0	0	0	0	0	0	0	0	0	0
250	2	1	1	0	0	0	0	0	0	0	0	0	0	0
255	2	1	1	0	0	0	0	0	0	0	0	0	0	0
260	3	1	1	0	0	0	0	0	0	0	0	0	0	0
265	3	2	1	0	0	0	0	0	0	0	0	0	0	0
270	3	2	1	1	0	0	0	0	0	0	0	0	0	0
280	3	2	1	1	0	0	0	0	0	0	0	0	0	0
290	4	2	1	1	0	0	0	0	0	0	0	0	0	0
300	4	3	2	1	1	0	0	0	0	0	0	0	0	0
310	4	3	2	1	1	0	0	0	0	0	0	0	0	0
320	5	3	2	1	1	0	0	0	0	0	0	0	0	0
330	5	3	2	1	1	1	0	0	0	0	0	0	0	0
340	5	4	2	2	1	1	0	0	0	0	0	0	0	0
360	5	4	3	2	1	1	1	0	0	0	0	0	0	0
380	5	4	3	2	2	1	1	0	0	0	0	0	0	0
400	5	4	3	2	2	1	1	1	0	0	0	0	0	0
450	5	4	3	2	2	1	1	1	1	0	0	0	0	0
500	4	3	3	2	2	2	1	1	1	1	0	0	0	0
550	3	3	2	2	2	1	1	1	1	1	0	0	0	0
600	2	2	2	2	1	1	1	1	1	1	1	0	0	0
700	1	1	1	1	1	1	1	1	1	0	0	0	0	0

Table A.11. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 30 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	104	16	0	0	0	0	0	0	0	0	0	0	0	0
0	4100	927	11	0	0	0	0	0	0	0	0	0	0	0
5	7100	2211	67	0	0	0	0	0	0	0	0	0	0	0
10	6274	2482	154	1	0	0	0	0	0	0	0	0	0	0
15	5497	2587	270	6	0	0	0	0	0	0	0	0	0	0
20	4845	2584	392	17	0	0	0	0	0	0	0	0	0	0
25	4297	2510	500	34	1	0	0	0	0	0	0	0	0	0
30	3835	2396	584	56	2	0	0	0	0	0	0	0	0	0
35	3442	2266	646	80	4	0	0	0	0	0	0	0	0	0
40	3105	2132	691	105	8	0	0	0	0	0	0	0	0	0
45	2814	2002	721	132	12	1	0	0	0	0	0	0	0	0
50	2560	1878	741	158	18	1	0	0	0	0	0	0	0	0
55	2338	1762	753	183	25	2	0	0	0	0	0	0	0	0
60	2143	1652	758	206	33	3	0	0	0	0	0	0	0	0
65	1970	1551	756	228	43	5	0	0	0	0	0	0	0	0
70	1816	1456	750	248	53	7	1	0	0	0	0	0	0	0
75	1678	1367	740	266	63	10	1	0	0	0	0	0	0	0
80	1554	1285	726	281	74	13	2	0	0	0	0	0	0	0
85	1443	1209	711	293	85	17	2	0	0	0	0	0	0	0
90	1342	1138	693	303	95	22	3	0	0	0	0	0	0	0
95	1259	1077	673	308	103	25	4	1	0	0	0	0	0	0
100	1186	1021	652	309	109	28	5	1	0	0	0	0	0	0
105	1118	969	632	310	114	32	7	1	0	0	0	0	0	0
110	1055	920	612	310	119	35	8	1	0	0	0	0	0	0
115	995	874	592	309	124	39	9	2	0	0	0	0	0	0
120	940	830	572	308	129	42	11	2	0	0	0	0	0	0
125	888	789	553	306	133	46	12	3	0	0	0	0	0	0
130	840	750	534	303	137	50	14	3	1	0	0	0	0	0
135	795	713	516	300	141	53	16	4	1	0	0	0	0	0
140	753	679	497	296	144	57	18	5	1	0	0	0	0	0
145	713	646	480	292	145	60	20	6	1	0	0	0	0	0
150	676	615	463	288	148	63	22	6	2	0	0	0	0	0
155	641	585	446	283	150	66	24	8	2	0	0	0	0	0
160	608	558	430	278	151	69	27	9	2	1	0	0	0	0
165	577	531	414	273	152	72	29	10	3	1	0	0	0	0
170	549	506	398	267	153	74	31	11	3	1	0	0	0	0
175	521	483	384	261	153	77	33	12	4	1	0	0	0	0
180	496	461	369	255	153	79	35	13	4	1	0	0	0	0
185	472	440	355	249	152	80	37	15	5	2	0	0	0	0
190	449	420	342	243	151	82	39	16	6	2	0	0	0	0
195	428	401	329	237	150	83	41	17	6	2	1	0	0	0
200	408	383	317	231	149	84	42	19	7	2	1	0	0	0
205	389	366	305	225	147	85	44	20	8	3	1	0	0	0
210	371	350	293	219	146	86	45	21	9	3	1	0	0	0
215	354	334	282	213	144	87	47	22	10	4	1	0	0	0
220	337	320	272	207	142	87	48	24	10	4	1	0	0	0
225	322	306	261	201	139	87	49	25	11	5	2	1	0	0
230	308	293	251	195	137	87	50	26	12	5	2	1	0	0
235	294	280	242	190	135	87	51	27	13	6	2	1	0	0

Table A.11. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
240	281	268	233	184	132	86	51	28	14	6	3	1	0	0
245	269	257	224	178	130	86	52	29	15	7	3	1	0	0
250	257	246	216	173	127	85	53	30	15	7	3	1	0	0
255	246	236	208	168	124	85	53	30	16	8	3	1	1	0
260	236	226	200	163	122	84	53	31	17	8	4	2	1	0
265	226	217	192	158	119	83	54	32	17	9	4	2	1	0
270	216	208	185	153	116	82	54	32	18	9	4	2	1	0
275	207	200	178	148	114	81	54	33	19	10	5	2	1	0
280	199	192	172	143	111	80	54	33	19	10	5	2	1	0
285	191	184	166	139	108	79	53	34	20	11	6	3	1	0
290	183	177	159	134	106	78	53	34	20	11	6	3	1	1
295	176	170	154	130	103	76	53	34	21	12	6	3	1	1
300	168	163	148	126	100	75	53	35	21	12	7	3	2	1
305	162	157	143	122	98	74	52	35	22	13	7	4	2	1
310	155	151	137	118	95	72	52	35	22	13	7	4	2	1
320	143	139	128	111	90	70	51	35	23	14	8	4	2	1
330	132	129	119	104	86	67	50	35	23	14	9	5	3	1
340	123	119	110	97	91	64	48	34	23	15	9	5	3	2
350	113	111	103	91	77	61	47	34	24	15	10	6	3	2
360	105	103	96	85	72	59	45	33	24	16	10	6	4	2
370	97	95	89	80	68	56	44	33	23	16	11	7	4	2
380	90	89	83	75	64	53	42	32	23	16	11	7	4	3
390	84	82	77	70	61	51	41	31	23	16	11	7	5	3
400	78	77	72	66	57	48	39	30	23	16	11	8	5	3
420	68	66	63	58	51	44	36	29	22	16	12	8	5	3
440	59	58	55	51	45	39	33	27	21	16	12	8	6	4
460	51	50	48	45	40	35	30	25	20	15	12	8	6	4
480	45	44	42	39	36	32	27	23	18	15	11	8	6	4
500	39	38	37	35	32	28	25	21	17	14	11	8	6	5
550	28	28	27	25	24	21	19	17	14	12	10	8	6	5
600	20	20	20	19	18	16	15	13	11	10	8	7	6	4
650	15	15	15	14	13	12	11	10	9	8	7	6	5	4
700	11	11	11	10	10	9	9	8	7	6	6	5	4	4
800	6	6	6	6	6	5	5	5	4	4	4	3	3	3
900	4	4	3	3	3	3	3	3	3	3	2	2	2	2
1000	2	2	2	2	2	2	2	2	2	2	1	1	1	1

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
320	1	0	0	0	0	0	0	0	0	0	0	0	0	0
330	1	0	0	0	0	0	0	0	0	0	0	0	0	0
340	1	0	0	0	0	0	0	0	0	0	0	0	0	0
350	1	0	0	0	0	0	0	0	0	0	0	0	0	0
360	1	1	0	0	0	0	0	0	0	0	0	0	0	0
370	1	1	0	0	0	0	0	0	0	0	0	0	0	0
380	1	1	0	0	0	0	0	0	0	0	0	0	0	0
390	2	1	0	0	0	0	0	0	0	0	0	0	0	0
400	2	1	1	0	0	0	0	0	0	0	0	0	0	0
420	2	1	1	0	0	0	0	0	0	0	0	0	0	0
440	2	2	1	1	0	0	0	0	0	0	0	0	0	0
460	3	2	1	1	0	0	0	0	0	0	0	0	0	0
480	3	2	1	1	1	0	0	0	0	0	0	0	0	0
500	3	2	2	1	1	0	0	0	0	0	0	0	0	0
550	4	3	2	1	1	1	0	0	0	0	0	0	0	0
600	4	3	2	2	1	1	1	0	0	0	0	0	0	0
650	3	3	2	2	1	1	1	1	0	0	0	0	0	0
700	3	2	2	2	1	1	1	1	0	0	0	0	0	0
800	2	2	2	1	1	1	1	1	1	0	0	0	0	0
900	2	1	1	1	1	1	1	1	0	0	0	0	0	0
1000	1	1	1	1	1	1	1	0	0	0	0	0	0	0

Table A.12. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 40 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	41	5	0	0	0	0	0	0	0	0	0	0	0	0
0	3185	545	3	0	0	0	0	0	0	0	0	0	0	0
5	5756	1364	18	0	0	0	0	0	0	0	0	0	0	0
10	5236	1609	47	0	0	0	0	0	0	0	0	0	0	0
15	4729	1778	95	1	0	0	0	0	0	0	0	0	0	0
20	4278	1879	153	3	0	0	0	0	0	0	0	0	0	0
25	3883	1919	231	7	0	0	0	0	0	0	0	0	0	0
30	3537	1912	302	14	0	0	0	0	0	0	0	0	0	0
35	3233	1873	364	24	1	0	0	0	0	0	0	0	0	0
40	2966	1815	416	36	1	0	0	0	0	0	0	0	0	0
45	2730	1745	456	49	2	0	0	0	0	0	0	0	0	0
50	2520	1672	488	63	4	0	0	0	0	0	0	0	0	0
55	2333	1597	512	77	5	0	0	0	0	0	0	0	0	0
60	2165	1524	531	92	8	0	0	0	0	0	0	0	0	0
65	2015	1453	545	106	11	1	0	0	0	0	0	0	0	0
70	1879	1385	554	121	14	1	0	0	0	0	0	0	0	0
75	1755	1320	561	135	18	1	0	0	0	0	0	0	0	0
80	1643	1258	564	148	23	2	0	0	0	0	0	0	0	0
85	1541	1199	565	161	28	3	0	0	0	0	0	0	0	0
90	1448	1143	563	173	33	4	0	0	0	0	0	0	0	0
95	1362	1090	559	184	39	5	0	0	0	0	0	0	0	0
100	1283	1040	554	194	45	7	1	0	0	0	0	0	0	0
105	1211	993	547	203	51	8	1	0	0	0	0	0	0	0
110	1144	948	539	211	57	10	1	0	0	0	0	0	0	0
115	1082	905	531	218	63	13	2	0	0	0	0	0	0	0
120	1024	865	521	224	69	15	2	0	0	0	0	0	0	0
125	972	827	511	228	74	17	3	0	0	0	0	0	0	0
130	929	795	499	229	77	19	3	0	0	0	0	0	0	0
135	888	764	487	230	81	21	4	1	0	0	0	0	0	0
140	850	735	476	231	84	23	5	1	0	0	0	0	0	0
145	813	707	465	231	87	25	5	1	0	0	0	0	0	0
150	778	680	453	231	90	27	6	1	0	0	0	0	0	0
155	745	654	442	230	92	29	7	1	0	0	0	0	0	0
160	714	629	431	230	95	31	8	1	0	0	0	0	0	0
165	684	606	420	229	98	33	9	2	0	0	0	0	0	0
170	656	583	410	228	100	35	10	2	0	0	0	0	0	0
175	629	561	399	226	102	37	11	2	0	0	0	0	0	0
180	603	540	389	224	104	39	12	3	1	0	0	0	0	0
185	579	521	379	223	106	41	13	3	1	0	0	0	0	0
190	556	501	368	220	107	43	14	4	1	0	0	0	0	0
195	534	483	359	218	109	45	15	4	1	0	0	0	0	0
200	513	466	349	216	110	46	16	5	1	0	0	0	0	0
205	492	449	339	213	111	48	17	5	1	0	0	0	0	0
210	473	433	330	210	112	50	18	6	1	0	0	0	0	0
215	455	417	321	208	113	51	20	6	2	0	0	0	0	0
220	438	402	312	205	113	53	21	7	2	0	0	0	0	0
225	421	388	303	201	114	54	22	8	2	1	0	0	0	0
230	405	374	295	198	114	56	23	9	3	1	0	0	0	0
235	390	361	287	195	114	57	24	9	3	1	0	0	0	0
240	376	349	279	[illegible]	114	58	26	10	3	1	0	0	0	0
245	362	337	271	189	114	59	27	10	4	1	0	0	0	0
250	349	325	263	185	113	60	28	11	4	1	0	0	0	0
255	336	314	256	182	113	61	29	12	4	1	0	0	0	0
260	324	303	248	178	112	62	30	13	5	2	0	0	0	0
265	312	293	241	175	111	62	31	13	5	2	0	0	0	0
270	301	283	235	172	111	63	32	14	5	2	1	0	0	0
275	291	273	228	168	110	64	33	15	6	2	1	0	0	0
280	280	264	221	165	109	64	33	15	6	2	1	0	0	0
285	271	256	215	161	109	64	34	16	7	3	1	0	0	0
290	261	247	209	158	107	65	35	17	7	3	1	0	0	0
295	252	239	203	155	106	65	36	18	8	3	1	0	0	0
300	244	231	197	151	104	65	36	19	8	3	1	0	0	0
305	236	224	192	148	103	65	37	19	9	4	1	0	0	0
310	228	216	186	145	102	65	37	17	9	4	1	1	0	0

Table A.12. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
315	220	209	181	142	101	65	38	20	10	4	2	1	0	0
320	213	203	176	138	99	65	38	21	10	4	2	1	0	0
325	206	196	171	135	98	64	39	21	10	5	2	1	0	0
330	199	190	166	132	96	64	39	22	11	5	2	1	0	0
335	192	184	161	129	95	64	39	22	11	5	2	1	0	0
340	186	178	157	126	93	63	39	22	12	6	2	1	0	0
350	174	167	148	121	90	62	40	23	13	6	3	1	0	0
360	164	157	140	115	87	61	40	24	13	7	3	1	1	0
370	153	148	132	110	84	60	40	25	14	7	4	2	1	0
380	144	139	125	104	81	59	40	25	15	8	4	2	1	0
390	135	131	118	100	78	58	40	25	15	9	4	2	1	0
400	127	123	112	95	75	56	39	26	16	9	5	2	1	1
410	120	116	106	90	73	55	39	26	16	10	5	3	1	1
420	113	109	100	86	70	53	38	26	17	10	6	3	2	1
430	106	103	95	82	67	52	38	26	17	10	6	3	2	1
440	100	97	90	78	64	50	37	26	17	11	6	4	2	1
450	94	92	85	74	62	49	36	26	17	11	7	4	2	1
460	89	87	80	71	59	47	36	26	17	11	7	4	2	1
480	79	77	72	64	54	44	34	25	18	12	8	5	3	1
500	71	69	65	58	50	41	32	24	17	12	8	5	3	2
520	63	62	58	53	46	38	30	23	17	12	8	5	3	2
540	57	56	53	48	42	35	29	22	17	12	9	6	4	2
560	51	50	47	43	38	33	27	21	16	12	9	6	4	3
580	46	45	43	39	35	30	25	20	16	12	9	6	4	3
600	41	41	39	36	32	28	24	19	15	12	9	6	4	3
650	32	31	30	28	26	23	20	17	14	11	8	6	5	3
700	25	25	24	22	21	19	16	14	12	10	8	6	5	3
750	19	19	19	18	17	15	13	12	10	9	7	6	4	3
800	15	15	15	14	13	12	11	10	9	7	6	5	4	3
900	10	10	9	9	9	8	7	7	6	5	5	4	3	3
1000	6	6	6	6	6	5	5	5	4	4	3	3	3	2
1100	4	4	4	4	4	4	3	3	3	3	2	2	2	2
1200	3	3	3	3	2	2	2	2	2	2	2	2	1	1

Table A.13. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 50 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	16	1	0	0	0	0	0	0	0	0	0	0	0	0
0	2600	337	1	0	0	0	0	0	0	0	0	0	0	0
5	4816	872	5	0	0	0	0	0	0	0	0	0	0	0
10	4464	1067	15	0	0	0	0	0	0	0	0	0	0	0
15	4116	1232	33	0	0	0	0	0	0	0	0	0	0	0
20	3793	1360	63	0	0	0	0	0	0	0	0	0	0	0
25	3500	1448	102	1	0	0	0	0	0	0	0	0	0	0
30	3236	1499	149	3	0	0	0	0	0	0	0	0	0	0
35	2998	1519	197	7	0	0	0	0	0	0	0	0	0	0
40	2784	1514	244	12	0	0	0	0	0	0	0	0	0	0
45	2591	1492	285	18	0	0	0	0	0	0	0	0	0	0
50	2417	1458	320	26	1	0	0	0	0	0	0	0	0	0
55	2260	1416	349	34	1	0	0	0	0	0	0	0	0	0
60	2117	1371	372	42	2	0	0	0	0	0	0	0	0	0
65	1987	1324	392	51	3	0	0	0	0	0	0	0	0	0
70	1868	1276	407	61	4	0	0	0	0	0	0	0	0	0
75	1759	1229	419	70	6	0	0	0	0	0	0	0	0	0
80	1660	1184	429	79	7	0	0	0	0	0	0	0	0	0
85	1568	1139	437	88	9	1	0	0	0	0	0	0	0	0
90	1483	1096	443	98	12	1	0	0	0	0	0	0	0	0
95	1405	1055	447	107	14	1	0	0	0	0	0	0	0	0
100	1332	1015	449	115	17	1	0	0	0	0	0	0	0	0
105	1265	977	450	124	20	2	0	0	0	0	0	0	0	0
110	1202	940	450	132	24	3	0	0	0	0	0	0	0	0
115	1144	905	448	139	27	3	0	0	0	0	0	0	0	0
120	1089	871	446	146	31	4	0	0	0	0	0	0	0	0
125	1039	839	443	152	34	5	0	0	0	0	0	0	0	0
130	991	808	439	158	38	6	1	0	0	0	0	0	0	0
135	946	779	434	164	42	7	1	0	0	0	0	0	0	0
140	904	751	429	169	46	9	1	0	0	0	0	0	0	0
145	865	723	423	173	50	10	1	0	0	0	0	0	0	0
150	828	698	417	177	53	11	2	0	0	0	0	0	0	0
155	793	673	411	181	57	13	2	0	0	0	0	0	0	0
160	763	651	404	182	60	14	2	0	0	0	0	0	0	0
165	736	630	396	183	62	15	3	0	0	0	0	0	0	0
170	710	611	389	183	64	17	3	0	0	0	0	0	0	0
175	685	592	382	184	66	18	4	1	0	0	0	0	0	0
180	661	574	374	184	68	19	4	1	0	0	0	0	0	0
185	638	556	367	184	70	20	4	1	0	0	0	0	0	0
190	617	539	360	184	72	21	5	1	0	0	0	0	0	0
195	596	523	353	184	74	23	5	1	0	0	0	0	0	0
200	575	507	346	183	75	24	6	1	0	0	0	0	0	0
205	556	491	339	183	77	25	6	1	0	0	0	0	0	0
210	537	477	332	182	78	27	7	1	0	0	0	0	0	0
215	520	462	325	181	80	28	8	2	0	0	0	0	0	0
220	502	448	319	180	81	29	8	2	0	0	0	0	0	0
225	486	435	312	179	83	30	9	2	0	0	0	0	0	0
230	470	422	305	178	94	32	10	2	0	0	0	0	0	0
235	455	410	299	177	85	33	10	3	1	0	0	0	0	0
240	440	398	293	175	86	34	11	3	1	0	0	0	0	0
245	426	386	286	174	87	35	12	3	1	0	0	0	0	0
250	413	375	280	172	87	37	13	4	1	0	0	0	0	0
255	400	364	274	171	88	38	13	4	1	0	0	0	0	0
260	387	353	268	169	89	39	14	4	1	0	0	0	0	0
265	375	343	262	167	89	40	15	5	1	0	0	0	0	0
270	364	333	256	166	90	41	16	5	1	0	0	0	0	0
275	352	324	251	164	90	42	16	5	2	0	0	0	0	0
280	342	314	245	162	90	43	17	6	2	0	0	0	0	0
285	331	305	240	160	91	44	18	6	2	0	0	0	0	0

Table A.13. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
290	321	297	234	158	91	45	19	7	2	1	0	0	0	0
295	312	289	229	156	91	45	19	7	2	1	0	0	0	0
300	302	280	224	154	91	46	20	8	2	1	0	0	0	0
305	293	273	219	151	91	47	21	8	3	1	0	0	0	0
310	285	265	214	149	90	47	22	8	3	1	0	0	0	0
315	276	258	209	147	90	48	22	9	3	1	0	0	0	0
320	268	251	204	145	90	49	23	9	3	1	0	0	0	0
325	261	244	200	143	90	49	24	10	4	1	0	0	0	0
330	253	237	195	141	89	50	24	10	4	1	0	0	0	0
335	246	231	191	139	89	50	25	11	4	1	0	0	0	0
340	239	224	186	136	88	50	25	11	4	2	0	0	0	0
345	232	218	182	134	88	51	26	12	5	2	1	0	0	0
350	226	213	178	132	87	51	26	12	5	2	1	0	0	0
355	219	207	174	130	86	51	27	13	5	2	1	0	0	0
360	213	201	170	128	86	51	27	13	6	2	1	0	0	0
370	202	191	162	123	84	52	28	14	6	2	1	0	0	0
380	191	181	155	119	83	52	29	15	7	3	1	0	0	0
390	181	172	148	115	81	52	30	16	7	3	1	0	0	0
400	171	163	141	111	79	51	30	16	8	3	1	1	0	0
410	162	155	135	107	78	51	31	17	8	4	2	1	0	0
420	154	147	129	103	76	51	31	18	9	4	2	1	0	0
430	146	140	123	99	74	50	32	18	10	5	2	1	0	0
440	138	133	117	96	72	50	32	19	10	5	2	1	0	0
450	131	126	112	92	70	49	32	19	11	5	3	1	0	0
460	125	120	107	89	68	48	32	19	11	6	3	1	1	0
470	119	114	103	85	66	48	32	20	11	6	3	1	1	0
480	113	109	98	82	64	47	32	20	12	6	3	2	1	0
500	102	95	90	76	60	45	31	20	13	7	4	2	1	0
520	93	90	82	70	57	43	31	21	13	8	4	2	1	1
540	84	82	75	65	53	41	30	21	13	8	5	3	1	1
560	77	75	69	60	50	39	29	21	14	9	5	3	2	1
580	70	68	63	56	47	37	28	20	14	9	6	3	2	1
600	64	62	58	51	44	35	27	20	14	9	6	4	2	1
650	51	50	47	42	37	30	24	19	14	10	7	4	3	2
700	41	40	38	35	31	26	22	17	13	10	7	5	3	2
750	33	33	31	29	26	22	19	15	12	9	7	5	3	2
800	27	27	25	24	22	19	16	14	11	9	7	5	4	3
850	22	22	21	20	18	16	14	12	10	8	6	5	4	3
900	18	18	17	16	15	14	12	10	9	7	6	5	4	3
1000	12	12	12	11	11	10	9	8	7	6	5	4	3	3
1100	8	8	8	8	9	7	6	6	5	5	4	3	3	2
1200	6	6	6	6	5	5	5	4	4	4	3	3	2	2
1300	4	4	4	4	4	4	3	3	3	3	2	2	2	2
1400	3	3	3	3	3	3	3	2	2	2	2	2	2	1
1500	2	2	2	2	2	2	2	2	2	2	1	1	1	1

Table A.14. Estimated radiation exposures from fallout, assuming medium yield weapon, 7-d exposure (R), and effective fallout wind speed of 60 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	6	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2195	215	0	0	0	0	0	0	0	0	0	0	0	0
5	4130	570	1	0	0	0	0	0	0	0	0	0	0	0
10	3879	717	5	0	0	0	0	0	0	0	0	0	0	0
15	3628	857	11	0	0	0	0	0	0	0	0	0	0	0
20	3390	981	24	0	0	0	0	0	0	0	0	0	0	0
25	3167	1082	43	0	0	0	0	0	0	0	0	0	0	0
30	2961	1159	69	1	0	0	0	0	0	0	0	0	0	0
35	2772	1211	101	2	0	0	0	0	0	0	0	0	0	0
40	2599	1242	135	3	0	0	0	0	0	0	0	0	0	0
45	2440	1254	170	6	0	0	0	0	0	0	0	0	0	0
50	2295	1252	203	10	0	0	0	0	0	0	0	0	0	0
55	2162	1238	232	14	0	0	0	0	0	0	0	0	0	0
60	2040	1217	258	19	1	0	0	0	0	0	0	0	0	0
65	1928	1190	280	25	1	0	0	0	0	0	0	0	0	0
70	1824	1160	298	31	1	0	0	0	0	0	0	0	0	0
75	1728	1128	314	37	2	0	0	0	0	0	0	0	0	0
80	1640	1096	327	44	3	0	0	0	0	0	0	0	0	0
85	1558	1063	338	50	3	0	0	0	0	0	0	0	0	0
90	1482	1030	346	56	4	0	0	0	0	0	0	0	0	0
95	1411	998	354	63	6	0	0	0	0	0	0	0	0	0
100	1345	967	360	69	7	0	0	0	0	0	0	0	0	0
105	1283	937	365	76	8	0	0	0	0	0	0	0	0	0
110	1225	907	368	82	10	1	0	0	0	0	0	0	0	0
115	1171	879	371	88	12	1	0	0	0	0	0	0	0	0
120	1120	851	373	94	14	1	0	0	0	0	0	0	0	0
125	1072	824	374	100	16	1	0	0	0	0	0	0	0	0
130	1028	798	374	106	18	2	0	0	0	0	0	0	0	0
135	985	773	374	111	20	2	0	0	0	0	0	0	0	0
140	946	749	372	116	23	3	0	0	0	0	0	0	0	0
145	908	726	371	121	25	3	0	0	0	0	0	0	0	0
150	872	703	369	126	29	4	0	0	0	0	0	0	0	0
155	839	682	366	130	30	5	0	0	0	0	0	0	0	0
160	807	661	363	134	33	5	1	0	0	0	0	0	0	0
165	777	641	360	137	36	6	1	0	0	0	0	0	0	0
170	748	621	356	141	38	7	1	0	0	0	0	0	0	0
175	721	603	352	144	41	9	1	0	0	0	0	0	0	0
180	695	584	348	147	44	9	1	0	0	0	0	0	0	0
185	670	567	344	149	46	10	2	0	0	0	0	0	0	0
190	647	550	339	151	49	11	2	0	0	0	0	0	0	0
195	628	536	334	152	50	12	2	0	0	0	0	0	0	0
200	609	522	329	152	52	13	2	0	0	0	0	0	0	0
205	591	508	324	152	53	14	3	0	0	0	0	0	0	0
210	574	495	319	153	55	15	3	0	0	0	0	0	0	0
215	557	483	314	153	56	15	3	0	0	0	0	0	0	0
220	541	470	309	153	57	16	3	1	0	0	0	0	0	0
225	525	458	304	153	59	17	4	1	0	0	0	0	0	0
230	510	446	299	153	60	18	4	1	0	0	0	0	0	0
235	496	435	294	153	61	19	4	1	0	0	0	0	0	0
240	482	424	283	152	62	20	5	1	0	0	0	0	0	0
245	468	413	284	152	63	21	5	1	0	0	0	0	0	0
250	455	403	279	152	64	21	6	1	0	0	0	0	0	0
255	443	393	275	151	66	22	6	1	0	0	0	0	0	0
260	430	383	270	151	67	23	6	1	0	0	0	0	0	0
265	418	373	265	150	67	24	7	2	0	0	0	0	0	0
270	407	364	261	149	68	25	7	2	0	0	0	0	0	0
275	396	355	256	148	69	26	8	2	0	0	0	0	0	0
280	385	346	251	148	70	27	8	2	0	0	0	0	0	0
285	375	338	247	147	71	28	9	2	0	0	0	0	0	0
290	365	329	243	146	71	29	9	2	1	0	0	0	0	0
295	355	321	238	145	72	29	10	3	1	0	0	0	0	0
300	346	313	234	144	73	30	10	3	1	0	0	0	0	0
305	336	306	230	143	73	31	11	3	1	0	0	0	0	0
310	328	298	225	141	74	32	11	3	1	0	0	0	0	0

Table A.14. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
315	319	291	221	140	74	32	12	4	1	0	0	0	0	0
320	311	284	217	139	74	33	12	4	1	0	0	0	0	0
325	303	277	213	138	75	34	13	4	1	0	0	0	0	0
330	295	271	209	136	75	35	13	4	1	0	0	0	0	0
335	287	264	205	135	75	35	14	5	1	0	0	0	0	0
340	280	258	202	134	75	36	15	5	1	0	0	0	0	0
345	273	252	198	132	75	37	15	5	2	0	0	0	0	0
350	266	246	194	131	75	37	16	6	2	0	0	0	0	0
360	251	235	187	128	75	38	17	6	2	1	0	0	0	0
370	241	224	180	125	75	39	18	7	2	1	0	0	0	0
380	229	214	173	122	75	40	19	7	3	1	0	0	0	0
390	218	204	167	119	74	41	19	8	3	1	0	0	0	0
400	208	195	160	116	74	41	20	9	3	1	0	0	0	0
410	198	186	154	113	73	42	21	9	4	1	0	0	0	0
420	189	178	149	110	72	42	22	10	4	1	0	0	0	0
430	180	170	143	107	72	43	23	11	4	2	1	0	0	0
440	172	162	137	104	71	43	23	11	5	2	1	0	0	0
450	164	155	132	101	70	43	24	12	5	2	1	0	0	0
460	157	149	127	98	68	43	24	12	6	2	1	0	0	0
470	150	142	123	95	67	43	25	13	6	3	1	0	0	0
480	143	136	118	93	66	43	25	13	7	3	1	0	0	0
490	137	130	113	90	65	43	26	14	7	3	1	0	0	0
500	131	125	109	87	64	42	26	14	7	3	1	1	0	0
520	120	115	101	82	61	42	26	15	8	4	2	1	0	0
540	110	106	94	77	58	41	26	16	9	4	2	1	0	0
560	101	97	87	72	56	40	26	16	9	5	2	1	0	0
580	93	90	81	68	53	39	26	17	10	5	3	1	1	0
600	85	83	75	64	50	37	26	17	10	6	3	2	1	0
620	79	76	70	60	48	36	26	17	11	6	4	2	1	0
640	73	71	65	56	45	35	25	17	11	7	4	2	1	1
660	67	65	60	52	43	33	25	17	11	7	4	2	1	1
680	62	60	56	49	41	32	24	17	11	7	4	3	1	1
700	57	56	52	46	38	31	23	17	12	8	5	3	2	1
750	47	46	43	39	33	27	21	16	12	8	5	3	2	1
800	39	39	36	33	29	24	20	15	11	8	6	4	2	1
850	33	32	31	28	25	21	18	14	11	8	6	4	3	2
900	28	27	26	24	21	19	16	13	10	8	6	4	3	2
1000	20	19	19	17	16	14	12	10	9	7	5	4	3	2
1100	14	14	14	13	12	11	10	8	7	6	5	4	3	2
1200	10	10	10	9	9	8	7	7	6	5	4	3	3	2
1300	8	7	7	7	7	6	6	5	5	4	3	3	2	2
1400	6	6	5	5	5	5	4	4	4	3	3	2	2	2
1500	4	4	4	4	4	4	3	3	3	3	2	2	2	2
1600	3	3	3	3	3	3	3	2	2	2	2	2	1	1
1700	2	2	2	2	2	2	2	2	2	2	1	1	1	1

Table A.15. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 5 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-20	2	2	1	0	0	0	0	0	0	0	0	0	0	0
-15	102	80	39	12	2	0	0	0	0	0	0	0	0	0
-10	2222	1579	566	103	9	0	0	0	0	0	0	0	0	0
-5	9065	7405	4037	1469	357	58	6	0	0	0	0	0	0	0
0	20140	17745	12138	6446	2657	851	211	41	6	1	0	0	0	0
5	22360	20540	15921	10414	5748	2677	1052	349	98	23	5	1	0	0
10	19008	17776	14539	10400	6507	3560	1704	713	261	84	23	6	1	0
15	14835	14026	11855	8957	6049	3652	1971	951	410	158	54	17	5	1
20	11423	10901	9473	7497	5403	3546	2119	1153	572	258	106	40	14	4
25	8867	8526	7581	6232	4738	3330	2164	1301	723	371	176	77	31	12
30	6947	6722	6088	5162	4098	3045	2118	1379	841	480	256	128	60	26
35	5491	5339	4909	4268	3508	2727	2004	1393	915	568	334	185	97	48
40	4375	4271	3975	3527	2982	2404	1847	1353	944	628	399	241	139	76
45	3512	3440	3233	2916	2523	2095	1669	1276	936	659	445	288	179	107
50	2838	2787	2641	2414	2129	1811	1486	1177	899	662	471	323	214	136
55	2307	2271	2166	2002	1794	1557	1309	1067	843	645	479	344	240	162
60	1886	1860	1784	1664	1510	1333	1145	956	776	613	471	352	256	181
65	1549	1530	1475	1387	1272	1139	995	848	705	572	452	349	263	194
70	1278	1264	1223	1158	1072	971	861	746	633	525	426	338	263	200
75	1059	1049	1018	969	905	828	743	653	564	477	395	321	256	200
80	881	873	850	813	764	705	640	570	499	429	362	300	245	196
85	735	729	712	684	646	601	550	495	439	383	328	277	230	188
90	616	611	598	576	547	512	473	430	385	340	296	253	214	178
95	517	513	503	487	464	437	406	372	337	300	264	230	197	167
100	435	432	425	412	394	373	349	322	294	265	235	207	180	154
105	367	365	359	349	335	319	300	278	256	232	209	185	163	141
110	311	309	304	296	286	273	257	241	222	204	184	165	147	129
115	263	262	259	252	244	233	221	208	193	178	162	147	131	116
120	224	223	220	215	208	200	190	180	168	156	143	130	117	105
125	190	190	187	183	178	171	164	155	146	136	125	115	104	94
130	162	162	160	157	152	147	141	134	126	118	110	101	93	84
135	139	138	137	134	131	126	122	116	110	103	96	89	82	75
140	118	118	117	115	112	109	105	100	95	90	84	78	73	67
145	101	101	100	99	96	94	90	87	83	78	74	69	64	59
150	87	87	86	85	83	81	78	75	72	68	64	60	56	52
155	75	74	74	73	71	70	67	65	62	59	56	53	50	46
160	64	64	64	63	62	60	58	56	54	52	49	46	44	41
165	55	55	55	54	53	52	50	49	47	45	43	41	38	36
170	48	47	47	47	46	45	44	42	41	39	37	36	34	32
175	41	41	41	40	40	39	38	37	36	34	33	31	30	28
180	35	35	35	35	34	34	33	32	31	30	29	27	26	25
190	26	26	26	26	26	25	25	24	23	23	22	21	20	19
200	20	20	20	20	19	19	19	18	18	17	17	16	15	15
210	15	15	15	15	15	14	14	14	13	13	13	12	12	11
220	11	11	11	11	11	11	11	10	10	10	10	9	9	9
240	6	6	6	6	6	6	6	6	6	6	6	6	5	5
260	4	4	4	4	4	4	4	4	3	3	3	3	3	3
280	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table A.15. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
20	1	0	0	0	0	0	0	0	0	0	0	0	0	0
25	4	1	0	0	0	0	0	0	0	0	0	0	0	0
30	11	4	1	1	0	0	0	0	0	0	0	0	0	0
35	23	10	4	2	1	0	0	0	0	0	0	0	0	0
40	40	20	9	4	2	1	0	0	0	0	0	0	0	0
45	61	34	18	9	4	2	1	0	0	0	0	0	0	0
50	84	50	29	16	8	4	2	1	0	0	0	0	0	0
55	106	67	41	24	14	8	4	2	1	1	0	0	0	0
60	124	83	54	34	21	13	7	4	2	1	1	0	0	0
65	139	97	66	44	29	18	11	7	4	2	1	1	0	0
70	148	108	77	53	36	24	16	10	6	4	2	1	1	0
75	153	115	85	61	43	30	21	14	9	6	4	2	1	1
80	154	119	90	67	49	36	25	17	12	8	5	3	2	1
85	151	120	93	72	54	40	29	21	15	10	7	5	3	2
90	146	118	94	74	57	44	33	24	18	13	9	6	4	3
95	139	114	93	75	59	46	35	27	20	15	11	8	6	4
100	130	109	90	74	59	47	37	29	22	17	13	9	7	5
105	121	103	86	72	59	48	38	30	24	18	14	11	8	6
110	112	96	82	69	57	47	39	31	25	20	15	12	9	7
115	102	89	76	65	55	46	38	31	25	20	16	13	10	8
120	93	82	71	61	52	44	37	31	26	21	17	14	11	9
125	84	74	65	57	49	42	36	30	25	21	17	14	11	9
130	76	68	60	53	46	40	34	29	25	21	17	14	12	10
135	68	61	55	48	43	37	32	28	24	20	17	14	12	10
140	61	55	49	44	39	35	30	26	23	20	17	14	12	10
145	54	49	45	40	36	32	28	25	22	19	16	14	12	10
150	48	44	40	36	33	29	26	23	20	18	15	13	11	10
155	43	39	36	33	30	27	24	21	19	17	15	13	11	9
160	38	35	32	30	27	24	22	20	18	16	14	12	11	9
165	34	31	29	27	24	22	20	18	16	14	13	11	10	9
170	30	28	26	24	22	20	18	17	15	13	12	11	9	8
175	26	25	23	21	20	18	17	15	14	12	11	10	9	8
180	23	22	20	19	18	16	15	14	12	11	10	9	8	7
190	18	17	16	15	14	13	12	11	10	9	9	8	7	6
200	14	13	13	12	11	10	10	9	8	8	7	7	6	5
210	11	10	10	9	9	8	8	7	7	6	6	5	5	5
220	8	8	8	7	7	7	6	6	6	5	5	4	4	4
240	5	5	5	4	4	4	4	4	4	3	3	3	3	3
260	3	3	3	3	3	3	2	2	2	2	2	2	2	2
280	2	2	2	2	2	2	1	1	1	1	1	1	1	1

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	140	145	150	155	160	165	170	175	180	185	190	195	200	205
80	1	0	0	0	0	0	0	0	0	0	0	0	0	0
85	1	1	1	0	0	0	0	0	0	0	0	0	0	0
90	2	1	1	1	0	0	0	0	0	0	0	0	0	0
95	3	2	1	1	1	0	0	0	0	0	0	0	0	0
100	4	2	2	1	1	1	0	0	0	0	0	0	0	0
105	4	3	2	2	1	1	1	0	0	0	0	0	0	0
110	5	4	3	2	1	1	1	1	0	0	0	0	0	0
115	6	5	3	3	2	1	1	1	1	0	0	0	0	0
120	7	5	4	3	2	2	1	1	1	0	0	0	0	0
125	7	6	4	3	3	2	2	1	1	1	0	0	0	0
130	8	6	5	4	3	2	2	1	1	1	1	0	0	0
135	8	6	5	4	3	3	2	2	1	1	1	1	0	0
140	8	7	6	4	4	3	2	2	1	1	1	1	1	0
145	8	7	6	5	4	3	3	2	2	1	1	1	1	0
150	8	7	6	5	4	3	3	2	2	1	1	1	1	1
155	8	7	6	5	4	3	3	2	2	2	1	1	1	1
160	8	7	6	5	4	3	3	2	2	2	1	1	1	1
165	8	7	6	5	4	4	3	2	2	2	1	1	1	1
170	7	6	6	5	4	4	3	3	2	2	1	1	1	1
175	7	6	5	5	4	3	3	3	2	2	2	1	1	1
180	7	6	5	4	4	3	3	3	2	2	2	1	1	1
190	6	5	5	4	4	3	3	2	2	2	2	1	1	1
200	5	4	4	4	3	3	3	2	2	2	2	1	1	1
210	4	4	3	3	3	3	2	2	2	2	1	1	1	1

Table A.16. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 10 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-15	35	24	8	1	0	0	0	0	0	0	0	0	0	0
-10	968	591	135	11	0	0	0	0	0	0	0	0	0	0
-5	6204	4413	1588	289	27	1	0	0	0	0	0	0	0	0
0	16675	13144	6438	1959	370	44	1	0	0	0	0	0	0	0
5	21346	17968	10717	4530	1357	288	43	5	0	0	0	0	0	0
10	19152	16752	11212	5741	2249	674	155	27	4	0	0	0	0	0
15	15581	13970	10071	5837	2720	1019	307	74	14	2	0	0	0	0
20	12712	11606	8835	5607	2966	1308	481	147	38	8	1	0	0	0
25	10522	9742	7732	5260	3068	1534	657	241	76	21	5	1	0	0
30	9076	8462	6858	4832	2959	1576	729	293	103	31	8	2	0	0
35	7872	7386	6099	4433	2836	1597	792	345	133	45	13	3	1	0
40	6848	6462	5430	4062	2706	1605	848	393	167	62	21	6	2	0
45	5975	5668	4838	3716	2568	1597	894	450	204	83	31	10	3	1
50	5227	4982	4314	3394	2425	1574	929	498	242	107	43	16	5	2
55	4586	4390	3850	3094	2279	1538	951	539	280	133	58	23	8	3
60	4034	3876	3439	2818	2132	1489	960	572	315	160	75	32	13	5
65	3557	3430	3075	2563	1986	1431	959	597	346	186	93	43	19	8
70	3145	3042	2752	2330	1845	1366	947	614	372	211	112	56	26	11
75	2787	2703	2466	2116	1708	1297	926	622	393	234	131	69	34	16
80	2476	2407	2212	1922	1578	1225	899	623	409	253	148	82	43	21
85	2204	2147	1987	1745	1455	1152	866	618	419	270	165	95	53	27
90	1966	1919	1786	1584	1340	1080	830	608	424	282	179	108	62	34
95	1757	1719	1608	1439	1232	1009	790	592	425	291	191	120	72	41
100	1573	1541	1449	1307	1132	940	750	574	421	297	201	130	81	49
105	1411	1385	1307	1188	1039	875	709	552	415	299	208	139	90	56
110	1268	1246	1181	1090	953	812	667	529	405	299	213	147	97	62
115	1141	1123	1068	983	874	753	627	505	393	296	216	152	104	68
120	1029	1013	967	894	802	697	587	480	380	291	217	156	109	74
125	929	915	876	814	735	645	549	454	365	285	216	159	114	79
130	840	828	795	742	674	596	513	429	349	277	213	160	117	83
135	760	750	722	677	618	551	478	404	333	268	210	160	119	86
140	689	680	656	617	567	508	445	380	317	258	205	159	120	89
145	625	618	597	564	520	469	414	357	300	247	199	156	120	90
150	568	561	544	515	477	433	385	334	284	236	193	153	120	91
155	516	511	495	471	438	400	357	313	268	225	186	150	118	92
160	470	465	452	431	402	369	331	292	253	214	178	146	116	91
165	428	424	413	394	369	340	307	273	238	203	171	141	114	91
170	390	387	377	361	339	314	285	255	223	193	163	136	111	89
175	356	353	[illegible]	331	312	290	264	237	210	182	155	131	108	88
180	325	323	315	303	287	267	245	221	196	172	148	125	104	86
185	298	295	289	279	264	247	227	206	184	162	140	120	101	83
190	272	270	265	255	243	228	210	192	172	152	133	114	97	81
195	249	248	243	234	223	210	195	178	161	143	126	109	93	78
200	228	227	223	215	206	194	180	166	150	134	119	103	89	76
205	210	208	204	198	190	179	167	154	140	126	112	98	85	73
210	192	191	188	182	175	165	155	143	131	118	106	93	81	70
215	177	176	173	168	161	153	144	133	122	111	99	88	77	67
220	162	161	159	154	148	141	133	124	114	104	93	83	73	64
225	149	148	146	142	137	131	123	115	106	97	88	79	70	61
230	137	136	134	131	126	121	114	107	99	91	82	74	66	58
235	126	126	124	121	117	112	106	99	92	85	77	70	62	55
240	116	116	114	111	108	103	98	92	86	79	73	66	59	52
245	107	107	105	103	100	96	91	86	80	74	68	62	56	50
250	99	98	97	95	92	89	84	80	75	69	64	58	53	47
255	91	91	90	88	85	82	78	74	70	65	60	55	50	45
260	84	84	83	81	79	76	73	69	65	60	56	51	47	42
265	78	77	76	75	73	70	67	64	60	56	52	48	44	40
270	72	71	71	69	67	65	62	59	56	53	49	45	42	38
280	61	61	60	59	59	56	54	51	49	46	43	40	37	34
290	52	52	52	51	50	48	46	44	42	40	38	35	32	30
300	45	45	44	44	43	41	40	38	37	35	33	31	29	26
310	38	38	38	37	37	36	35	33	32	30	29	27	25	23
320	33	33	33	32	32	31	30	29	28	26	25	24	22	21
340	24	24	24	24	23	23	22	22	21	20	19	18	17	16
360	18	18	18	18	19	17	17	16	16	15	15	14	13	13
380	14	14	13	13	13	13	13	12	12	12	11	11	10	10
400	10	10	10	10	10	10	10	9	9	9	8	8	8	7
450	5	5	5	5	5	5	5	5	5	4	4	4	4	4
500	3	3	2	2	2	2	2	2	2	2	2	2	2	2

Table A.16. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
55	1	0	0	0	0	0	0	0	0	0	0	0	0	0
60	2	1	0	0	0	0	0	0	0	0	0	0	0	0
65	3	1	0	0	0	0	0	0	0	0	0	0	0	0
70	5	2	1	0	0	0	0	0	0	0	0	0	0	0
75	7	3	1	0	0	0	0	0	0	0	0	0	0	0
80	10	4	2	1	0.	0	0	0	0	0	0	0	0	0
85	14	6	3	1	0	0	0	0	0	0	0	0	0	0
90	18	9	4	2	1	0	0	0	0	0	0	0	0	0
95	23	12	6	3	1	1	0	0	0	0	0	0	0	0
100	28	15	8	4	2	1	0	0	0	0	0	0	0	0
105	33	19	11	6	3	1	1	0	0	0	0	0	0	0
110	38	23	13	7	4	2	1	0	0	0	0	0	0	0
115	44	27	16	9	5	3	1	1	0	0	0	0	0	0
120	49	31	19	11	7	4	2	1	1	0	0	0	0	0
125	53	35	22	14	8	5	3	1	1	0	0	0	0	0
130	57	38	25	16	10	6	4	2	1	1	0	0	0	0
135	61	42	28	18	12	7	4	3	1	1	0	0	0	0
140	64	45	31	21	14	9	5	3	2	1	1	0	0	0
145	66	48	33	23	15	10	6	4	2	1	1	0	0	0
150	68	50	36	25	17	11	8	5	3	2	1	1	0	0
155	70	52	38	27	19	13	9	6	4	2	1	1	1	0
160	70	53	39	29	20	14	10	7	4	3	2	1	1	0
165	71	54	41	30	22	16	11	7	5	3	2	1	1	1
170	71	55	42	31	23	17	12	8	6	4	3	2	1	1
175	70	55	43	32	24	18	13	9	6	4	3	2	1	1
180	69	55	43	33	25	19	14	10	7	5	3	2	2	1
185	68	55	43	34	26	20	15	11	8	6	4	3	2	1
190	67	54	43	34	27	20	15	11	8	6	4	3	2	1
195	65	53	43	34	27	21	16	12	9	7	5	3	2	2
200	63	52	43	34	27	21	17	13	10	7	5	4	3	2
205	61	51	42	34	28	22	17	13	10	8	6	4	3	2
210	59	50	41	34	28	22	17	14	11	8	6	5	3	2
215	57	48	41	33	27	22	18	14	11	8	6	5	4	3
220	55	47	40	33	27	22	18	14	11	9	7	5	4	3
225	53	45	38	32	27	22	18	14	11	9	7	5	4	3
230	51	44	37	32	26	22	18	15	12	9	7	6	4	3
235	48	42	36	31	26	22	18	15	12	9	8	6	5	4
240	46	40	35	30	25	21	18	15	12	10	8	6	5	4
245	44	39	34	29	25	21	17	15	12	10	8	6	5	4
250	42	37	32	28	24	20	17	14	12	10	8	6	5	4
255	40	35	31	27	23	20	17	14	12	10	8	7	5	4
260	38	34	30	26	23	19	17	14	12	10	8	7	5	4
265	36	32	28	25	22	19	16	14	12	10	8	7	5	4
270	34	31	27	24	21	18	16	13	11	10	8	7	6	5
280	31	28	25	22	19	17	15	13	11	9	8	7	6	5
290	27	25	22	20	18	16	14	12	11	9	8	7	6	5
300	24	22	20	18	16	15	13	11	10	9	7	6	5	5
310	22	20	18	16	15	13	12	11	9	8	7	6	5	5
320	19	18	16	15	14	12	11	10	9	8	7	6	5	4
340	15	14	13	12	11	10	9	8	7	7	6	5	5	4
360	12	11	10	10	9	8	8	7	6	6	5	5	4	4
380	9	9	8	8	7	7	6	6	5	5	4	4	4	3
400	7	7	6	6	6	5	5	5	4	4	4	3	3	3
450	4	4	3	3	3	3	3	3	2	2	2	2	2	2
500	2	2	2	2	2	2	2	1	1	1	1	1	1	1

Table A.17. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 20 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-15	7	4	1	0	0	0	0	0	0	0	0	0	0	0
-10	302	164	26	1	0	0	0	0	0	0	0	0	0	0
-5	3249	2016	481	44	2	0	0	0	0	0	0	0	0	0
0	11530	7940	2593	402	29	1	0	0	0	0	0	0	0	0
5	16906	12586	5193	1187	151	11	0	0	0	0	0	0	0	0
10	16181	12730	6199	1868	349	40	3	0	0	0	0	0	0	0
15	14037	11475	6269	2289	558	91	10	1	0	0	0	0	0	0
20	12195	10244	6073	2541	750	156	23	2	0	0	0	0	0	0
25	10693	9169	5781	2680	914	229	42	6	1	0	0	0	0	0
30	9451	8239	5458	2748	1052	306	68	11	1	0	0	0	0	0
35	8410	7433	5133	2769	1167	384	99	20	3	0	0	0	0	0
40	7528	6732	4815	2755	1260	461	135	32	6	1	0	0	0	0
45	6772	6118	4511	2715	1333	534	175	47	10	2	0	0	0	0
50	6119	5577	4222	2655	1387	602	217	65	16	3	1	0	0	0
55	5552	5099	3950	2581	1423	662	259	86	24	6	1	0	0	0
60	5054	4673	3695	2497	1443	713	301	109	34	9	2	0	0	0
65	4676	4341	3475	2397	1425	731	321	123	40	11	3	1	0	0
70	4347	4050	3274	2297	1399	739	339	135	47	14	4	1	0	0
75	4045	3781	3086	2201	1371	746	354	147	53	17	5	1	0	0
80	3767	3532	2910	2108	1342	751	370	160	61	20	6	2	0	0
85	3510	3301	2745	2019	1313	755	384	173	69	24	8	2	1	0
90	3274	3087	2590	1932	1282	757	397	185	77	28	9	3	1	0
95	3055	2889	2444	1849	1250	757	409	198	86	33	11	4	1	0
100	2854	2706	2306	1768	1218	754	420	210	95	38	14	5	1	0
105	2667	2535	2177	1690	1185	751	430	222	104	44	17	6	2	1
110	2494	2377	2056	1614	1151	745	438	233	113	50	20	7	2	1
115	2335	2229	1941	1542	1116	737	444	244	122	56	23	9	3	1
120	2187	2093	1834	1472	1082	728	449	253	131	62	27	11	4	1
125	2049	1965	1733	1405	1047	718	452	262	140	68	31	13	5	2
130	1922	1847	1637	1340	1012	706	454	270	148	75	35	15	6	2
135	1804	1736	1548	1278	978	693	455	276	156	81	39	18	7	3
140	1694	1633	1463	1219	943	679	454	282	163	87	44	20	9	3
145	1592	1537	1384	1162	909	664	452	287	170	94	48	23	10	4
150	1497	1447	1309	1107	876	648	449	290	176	99	53	26	12	5
155	1408	1364	1239	1055	843	632	444	293	181	105	57	29	14	6
160	1326	1285	1172	1006	811	615	439	295	186	110	62	32	16	7
165	1249	1212	1110	958	780	599	433	295	190	115	66	36	18	9
170	1177	1144	1051	913	749	581	426	295	194	120	70	39	20	10
175	1110	1080	996	870	720	564	419	295	196	124	74	42	23	11
180	1047	1020	944	829	691	547	411	293	199	128	78	45	25	13
185	988	964	894	790	663	530	402	291	200	131	81	48	27	15
190	934	911	849	752	636	512	394	288	201	134	85	51	30	16
195	882	862	804	717	610	496	384	285	202	136	88	54	32	18
200	834	816	763	683	585	479	375	281	201	138	91	57	34	20
205	789	772	724	651	560	462	365	277	201	140	93	59	36	21
210	746	731	687	620	537	446	356	272	200	141	95	62	39	23
215	707	693	653	591	514	430	346	267	198	142	97	64	41	25
220	669	657	620	563	493	415	336	262	197	142	99	66	43	26
225	634	623	589	537	472	400	326	257	195	142	100	68	44	28
230	601	591	560	512	452	385	317	251	192	142	101	70	46	30
235	570	560	532	488	433	371	307	245	190	141	102	71	48	31
240	541	532	506	466	415	357	297	239	187	141	103	72	49	33
245	513	505	481	444	397	343	288	234	183	140	103	73	51	34
250	487	480	458	424	380	330	278	228	180	138	103	74	52	35
255	463	456	436	404	364	318	269	221	177	137	103	75	53	36
260	440	433	415	386	348	306	260	215	173	135	102	75	54	38
265	418	412	395	368	334	294	252	209	169	133	102	76	55	39
270	397	392	376	351	319	282	243	203	166	131	101	76	56	39
275	378	373	359	336	306	271	235	197	162	129	100	76	56	40
280	360	355	342	320	293	261	226	192	158	127	100	76	57	41
285	342	338	326	306	280	251	219	186	154	125	98	76	57	42
290	326	322	310	292	268	241	211	180	150	122	97	75	57	42
295	310	307	296	279	257	231	203	175	146	120	96	75	57	43
300	296	292	282	267	246	222	196	163	142	117	94	74	57	43

Table A.17. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
305	282	278	269	255	236	213	189	164	139	115	93	74	57	43
310	268	265	257	244	226	205	182	158	135	112	91	73	57	43
315	256	253	245	233	216	197	175	153	131	110	90	72	57	44
320	244	241	234	223	207	189	169	148	127	107	88	71	56	44
325	233	230	224	213	199	182	163	143	123	104	86	70	56	44
330	222	220	214	204	190	174	157	138	120	102	85	69	55	43
335	212	210	204	195	182	168	151	134	116	99	83	68	55	43
340	202	200	195	186	175	161	145	129	113	96	81	67	54	43
345	193	191	186	178	167	155	140	125	109	94	79	66	53	43
350	184	183	178	171	160	148	135	120	106	91	77	64	53	42
355	176	175	170	163	154	143	130	116	102	89	76	63	52	42
360	168	167	163	156	147	137	125	112	99	86	74	62	51	42
365	161	160	156	150	141	131	120	108	96	84	72	61	50	41
370	154	152	149	143	136	126	116	105	93	81	70	59	50	41
375	147	146	142	137	130	121	111	101	90	79	68	58	49	40
380	140	139	136	131	125	116	107	97	87	77	66	57	48	40
390	129	128	125	121	115	108	99	91	81	72	63	54	46	38
400	118	117	114	111	105	99	92	84	76	68	59	52	44	37
410	108	107	105	102	97	92	85	78	71	64	56	49	42	36
420	99	98	96	93	89	85	79	73	66	60	53	46	40	34
430	91	90	89	86	82	78	73	68	62	56	50	44	38	33
440	83	83	81	79	76	72	68	63	58	52	47	42	37	32
450	76	76	75	73	70	67	63	58	54	49	44	39	35	30
460	70	70	69	67	65	62	58	54	50	46	42	37	33	29
480	59	59	58	57	55	53	50	47	44	40	37	33	30	26
500	50	50	50	48	47	45	43	40	38	35	32	29	26	24
520	43	43	42	41	40	39	37	35	33	31	28	26	23	21
540	36	36	36	35	34	33	32	30	28	27	25	23	21	19
560	31	31	31	30	29	28	27	26	25	23	22	20	18	17
580	27	26	26	26	25	24	24	23	21	20	19	18	16	15
600	23	23	22	22	22	21	20	19	19	18	17	15	14	13
650	15	15	15	15	15	14	14	14	13	12	12	11	10	10
700	11	11	11	10	10	10	10	9	9	9	8	8	8	7
800	5	5	5	5	5	5	5	5	5	4	4	4	4	4
900	3	3	2	2	2	2	2	2	2	2	2	2	2	2

	70	75	80	85	90	95	100	105	110	115	120	125	130	135
125	1	0	0	0	0	0	0	0	0	0	0	0	0	0
130	1	0	0	0	0	0	0	0	0	0	0	0	0	0
135	1	0	0	0	0	0	0	0	0	0	0	0	0	0
140	1	0	0	0	0	0	0	0	0	0	0	0	0	0
145	2	1	0	0	0	0	0	0	0	0	0	0	0	0
150	2	1	0	0	0	0	0	0	0	0	0	0	0	0
155	3	1	0	0	0	0	0	0	0	0	0	0	0	0
160	3	1	1	0	0	0	0	0	0	0	0	0	0	0
165	4	2	1	0	0	0	0	0	0	0	0	0	0	0
170	5	2	1	0	0	0	0	0	0	0	0	0	0	0
175	6	3	1	0	0	0	0	0	0	0	0	0	0	0
180	6	3	1	1	0	0	0	0	0	0	0	0	0	0
185	7	4	2	1	0	0	0	0	0	0	0	0	0	0
190	8	4	2	1	0	0	0	0	0	0	0	0	0	0
195	10	5	2	1	1	0	0	0	0	0	0	0	0	0
200	11	6	3	1	1	0	0	0	0	0	0	0	0	0
205	12	6	3	2	1	0	0	0	0	0	0	0	0	0
210	13	7	4	2	1	0	0	0	0	0	0	0	0	0
215	14	8	4	2	1	1	0	0	0	0	0	0	0	0
220	16	9	5	3	1	1	0	0	0	0	0	0	0	0
225	17	10	6	3	2	1	0	0	0	0	0	0	0	0
230	19	11	6	3	2	1	0	0	0	0	0	0	0	0
235	20	12	7	4	2	1	1	0	0	0	0	0	0	0
240	21	13	8	4	2	1	1	0	0	0	0	0	0	0
245	22	14	9	5	3	2	1	0	0	0	0	0	0	0

Table A.17. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
250	23	15	9	5	3	2	1	1	0	0	0	0	0	0
255	24	16	10	6	4	2	1	1	0	0	0	0	0	0
260	25	17	11	7	4	2	1	1	0	0	0	0	0	0
265	26	17	11	7	4	3	1	1	0	0	0	0	0	0
270	27	18	12	8	5	3	2	1	1	0	0	0	0	0
275	28	19	13	8	5	3	2	1	1	0	0	0	0	0
280	29	20	13	9	6	3	2	1	1	0	0	0	0	0
285	30	21	14	9	6	4	2	1	1	0	0	0	0	0
290	30	21	15	10	6	4	3	2	1	1	0	0	0	0
295	31	22	15	10	7	4	3	2	1	1	0	0	0	0
300	32	23	16	11	7	5	3	2	1	1	0	0	0	0
305	32	23	16	11	8	5	3	2	1	1	0	0	0	0
310	32	24	17	12	8	5	4	2	1	1	1	0	0	0
315	33	24	18	12	9	6	4	3	2	1	1	0	0	0
320	33	25	18	13	9	6	4	3	2	1	1	0	0	0
325	33	25	18	13	9	6	4	3	2	1	1	0	0	0
330	33	25	19	14	10	7	5	3	2	1	1	1	0	0
335	34	26	19	14	10	7	5	3	2	1	1	1	0	0
340	34	26	19	14	10	7	5	4	2	2	1	1	0	0
345	34	26	20	15	11	8	5	4	3	2	1	1	0	0
350	34	26	20	15	11	8	6	4	3	2	1	1	1	0
355	33	26	20	15	11	9	6	4	3	2	1	1	1	0
360	33	26	20	15	12	9	6	4	3	2	1	1	1	0
365	33	26	20	16	12	9	6	5	3	2	2	1	1	0
370	33	26	21	16	12	9	7	5	3	2	2	1	1	0
375	33	26	21	16	12	9	7	5	4	3	2	1	1	1
380	32	26	21	16	12	9	7	5	4	3	2	1	1	1
390	32	26	21	16	13	10	7	6	4	3	2	1	1	1
400	31	25	21	16	13	10	8	6	4	3	2	2	1	1
410	30	25	20	16	13	10	8	6	5	3	3	2	1	1
420	29	24	20	16	13	10	8	6	5	4	3	2	1	1
430	28	24	20	16	13	11	8	7	5	4	3	2	2	1
440	27	23	19	16	13	11	8	7	5	4	3	2	2	1
450	26	22	19	16	13	11	9	7	5	4	3	2	2	1
460	25	21	18	15	13	10	9	7	5	4	3	3	2	2
480	23	20	17	15	12	10	8	7	6	5	4	3	2	2
500	21	18	16	14	12	10	8	7	6	5	4	3	2	2
520	19	17	15	13	11	9	8	7	6	5	4	3	3	2
540	17	15	13	12	10	9	9	7	6	5	4	3	3	2
560	15	14	12	11	10	8	7	6	5	5	4	3	3	2
580	14	12	11	10	9	8	7	6	5	4	4	3	3	2
600	12	11	10	9	8	7	6	6	5	4	4	3	3	2
650	9	8	8	7	6	6	5	5	4	4	3	3	2	2
700	7	6	6	5	5	5	4	4	3	3	3	2	2	2
800	4	3	3	3	3	3	2	2	2	2	2	2	1	1
900	2	2	2	2	2	1	1	1	1	1	1	1	1	1

Table A.18. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 30 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-15	1	1	0	0	0	0	0	0	0	0	0	0	0	0
-10	116	59	7	0	0	0	0	0	0	0	0	0	0	0
-5	1943	1103	202	12	0	0	0	0	0	0	0	0	0	0
0	8633	5415	1337	130	5	0	0	0	0	0	0	0	0	0
5	13677	9297	2921	424	28	1	0	0	0	0	0	0	0	0
10	13436	9724	3686	732	76	4	0	0	0	0	0	0	0	0
15	12039	9136	3993	1005	146	12	1	0	0	0	0	0	0	0
20	10793	8489	4131	1243	232	27	2	0	0	0	0	0	0	0
25	9732	7865	4151	1431	322	47	5	0	0	0	0	0	0	0
30	8823	7282	4093	1567	409	73	9	1	0	0	0	0	0	0
35	8037	6746	3989	1662	488	101	15	2	0	0	0	0	0	0
40	7353	6260	3862	1726	559	131	22	3	0	0	0	0	0	0
45	6752	5819	3723	1769	624	164	32	5	0	0	0	0	0	0
50	6222	5419	3581	1795	683	197	43	7	1	0	0	0	0	0
55	5751	5057	3438	1808	735	231	56	11	2	0	0	0	0	0
60	5330	4727	3298	1810	781	265	71	15	2	0	0	0	0	0
65	4952	4426	3160	1802	821	299	87	20	4	1	0	0	0	0
70	4611	4150	3026	1787	855	331	104	26	5	1	0	0	0	0
75	4303	3897	2896	1765	883	362	122	34	8	1	0	0	0	0
90	4023	3665	2771	1739	905	391	140	42	10	2	0	0	0	0
85	3768	3451	2651	1708	923	418	159	51	14	3	1	0	0	0
90	3535	3253	2535	1673	935	443	178	60	17	4	1	0	0	0
95	3321	3070	2425	1636	944	465	196	70	22	6	1	0	0	0
100	3147	2918	2326	1594	939	475	207	77	25	7	2	0	0	0
105	2997	2785	2235	1549	927	479	214	82	27	8	2	0	0	0
110	2855	2659	2148	1506	915	483	221	88	30	9	2	1	0	0
115	2720	2539	2065	1463	903	486	229	93	33	10	3	1	0	0
120	2593	2426	1986	1422	891	489	235	98	36	12	3	1	0	0
125	2473	2318	1909	1382	879	491	241	104	39	13	4	1	0	0
130	2359	2216	1836	1343	866	493	248	110	43	15	4	1	0	0
135	2251	2119	1766	1304	853	494	254	115	46	17	5	1	0	0
140	2149	2026	1699	1267	840	495	259	121	50	18	6	2	0	0
145	2052	1938	1634	1230	826	495	265	126	54	20	7	2	1	0
150	1960	1855	1572	1194	812	495	270	132	58	23	8	3	1	0
155	1873	1775	1513	1159	798	494	275	137	62	25	9	3	1	0
160	1790	1700	1456	1125	783	492	279	143	66	27	10	3	1	0
165	1711	1628	1401	1091	769	490	283	148	70	30	12	4	1	0
170	1637	1559	1348	1058	754	483	286	152	74	32	13	5	2	0
175	1566	1494	1298	1026	739	484	289	157	78	35	14	5	2	1
180	1498	1432	1249	995	724	481	292	161	82	38	16	6	2	1
185	1434	1373	1203	965	709	477	294	166	86	40	18	7	3	1
190	1374	1316	1158	935	694	472	295	169	89	43	19	8	3	1
195	1316	1262	1115	906	678	467	296	173	93	46	21	9	3	1
200	1261	1211	1074	878	663	462	297	176	97	49	23	10	4	1
205	1208	1162	1034	851	648	457	298	179	100	52	25	11	4	2
210	1158	1115	996	825	633	451	298	182	103	54	27	12	5	2
215	1111	1071	959	799	618	445	297	185	107	57	28	13	6	2
220	1066	1028	924	774	603	438	296	187	109	60	30	14	6	3
225	1022	988	891	749	589	431	295	188	112	62	32	16	7	3
230	981	949	858	726	574	425	294	190	115	65	34	17	8	3
235	942	912	827	703	560	418	292	191	117	67	36	18	9	4
240	905	877	797	681	546	410	290	192	120	70	38	20	10	4
245	869	843	769	653	532	403	288	193	122	72	40	21	10	5
250	835	810	741	638	518	396	285	193	124	74	42	23	11	5
255	803	780	715	618	504	383	282	194	125	76	44	24	12	6
260	771	750	699	598	491	381	279	193	127	78	46	25	13	7
265	742	722	665	579	478	373	276	193	128	80	48	27	14	7
270	713	695	641	561	465	366	273	193	129	82	49	28	15	8
275	686	669	619	543	453	359	269	192	130	84	51	30	16	8
280	660	644	597	526	440	351	266	191	131	85	53	31	17	9
285	636	620	576	509	424	343	262	190	131	86	54	32	18	10
290	612	597	556	493	417	336	258	189	132	88	55	34	19	11
295	589	576	537	477	405	328	254	187	132	89	57	35	20	11
300	567	555	518	462	394	321	250	186	132	90	58	36	21	12
305	547	535	500	448	383	314	246	184	132	90	59	37	22	13

Table A.18. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
310	527	515	483	433	372	306	242	182	132	91	60	38	23	14
315	508	497	466	420	352	299	237	180	131	92	61	39	24	14
320	489	479	450	406	352	292	233	178	131	92	62	40	25	15
325	472	462	435	394	342	285	229	176	130	93	63	41	26	16
330	455	446	420	381	332	279	224	174	130	93	64	42	27	17
335	439	430	406	369	323	272	220	172	129	93	65	43	28	17
340	423	415	393	358	314	265	216	169	128	93	65	44	29	18
345	408	401	379	346	305	259	212	167	127	93	66	45	29	19
350	394	387	367	336	296	252	207	164	126	93	66	46	30	19
355	380	374	355	325	288	246	203	162	125	93	67	46	31	20
360	367	361	343	315	280	240	199	159	124	92	67	47	32	21
365	354	349	332	305	272	234	195	157	122	92	67	47	32	21
370	342	337	321	296	264	228	191	154	121	92	67	48	33	22
375	331	325	310	286	256	222	186	152	119	91	67	48	33	23
380	319	314	300	278	249	216	182	149	118	91	67	49	34	23
385	309	304	290	269	242	211	178	146	117	90	67	49	35	24
390	298	294	281	261	235	205	174	144	115	89	67	49	35	24
395	288	284	272	253	228	200	171	141	113	89	67	49	35	25
400	279	275	263	245	222	195	167	138	112	88	67	50	36	25
405	269	266	255	237	215	190	163	136	110	87	67	50	36	25
410	260	257	246	230	209	185	159	133	109	86	66	50	36	26
415	252	248	239	223	203	180	155	131	107	85	66	50	37	26
420	244	240	231	216	197	175	152	128	105	84	66	50	37	27
425	236	233	224	210	192	171	148	126	104	83	65	50	37	27
430	228	225	217	203	186	166	145	123	102	82	65	50	37	27
435	221	218	210	197	181	162	141	120	100	81	64	50	37	27
440	213	211	203	191	176	158	139	118	98	80	64	49	37	28
445	207	204	197	186	171	154	135	116	97	79	63	49	37	28
450	200	198	191	180	166	149	132	113	95	78	62	49	37	28
455	194	191	185	175	161	146	128	111	93	77	62	49	37	28
460	187	185	179	169	157	142	125	108	92	76	61	48	37	28
470	176	174	168	160	148	134	119	104	88	73	60	48	37	28
480	165	163	158	150	140	127	114	99	85	71	58	47	37	29
490	155	153	149	141	132	121	108	95	82	69	57	46	37	29
500	145	144	140	133	125	114	103	91	78	67	55	45	36	28
510	137	135	132	126	118	108	99	87	75	64	54	44	36	28
520	128	127	124	118	111	103	93	83	72	62	52	43	35	28
530	121	120	117	112	105	97	88	79	69	60	51	42	35	28
540	114	113	110	105	99	92	84	75	66	58	49	41	34	27
550	107	106	103	99	94	87	80	72	64	55	47	40	33	27
560	101	100	98	94	89	83	76	68	61	53	46	39	32	27
580	89	99	87	84	79	74	68	62	56	49	43	37	31	26
600	79	79	77	75	71	67	62	57	51	45	40	34	29	25
620	71	70	69	67	64	60	56	51	47	42	37	32	28	23
640	63	62	61	59	57	54	50	47	42	38	34	30	26	22
660	56	56	55	53	51	48	45	42	39	35	31	28	24	21
680	50	50	49	48	46	44	41	38	35	32	29	26	23	20
700	45	44	44	43	41	39	37	35	32	29	27	24	21	19
750	34	34	33	33	32	30	29	27	25	23	22	20	18	16
800	26	26	25	25	24	23	22	21	20	19	17	16	14	13
850	20	20	20	19	19	19	17	17	16	15	14	13	12	11
900	15	15	15	15	15	14	14	13	12	12	11	10	10	9
1000	9	9	9	9	9	9	8	8	8	7	7	7	6	6
1100	6	6	6	5	5	5	5	5	5	5	4	4	4	4
1200	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Table A.18. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
255	3	1	0	0	0	0	0	0	0	0	0	0	0	0
260	3	1	1	0	0	0	0	0	0	0	0	0	0	0
265	3	2	1	0	0	0	0	0	0	0	0	0	0	0
270	4	2	1	0	0	0	0	0	0	0	0	0	0	0
275	4	2	1	0	0	0	0	0	0	0	0	0	0	0
280	5	2	1	0	0	0	0	0	0	0	0	0	0	0
285	5	2	1	1	0	0	0	0	0	0	0	0	0	0
290	6	3	1	1	0	0	0	0	0	0	0	0	0	0
295	6	3	1	1	0	0	0	0	0	0	0	0	0	0
300	7	3	2	1	0	0	0	0	0	0	0	0	0	0
305	7	4	2	1	0	0	0	0	0	0	0	0	0	0
310	8	4	2	1	0	0	0	0	0	0	0	0	0	0
315	8	4	2	1	1	0	0	0	0	0	0	0	0	0
320	9	5	3	1	1	0	0	0	0	0	0	0	0	0
325	9	5	3	1	1	0	0	0	0	0	0	0	0	0
330	10	6	3	2	1	0	0	0	0	0	0	0	0	0
335	10	6	3	2	1	0	0	0	0	0	0	0	0	0
340	11	6	4	2	1	0	0	0	0	0	0	0	0	0
345	11	7	4	2	1	1	0	0	0	0	0	0	0	0
350	12	7	4	2	1	1	0	0	0	0	0	0	0	0
355	13	8	4	2	1	1	0	0	0	0	0	0	0	0
360	13	8	5	3	1	1	0	0	0	0	0	0	0	0
365	14	8	5	3	2	1	0	0	0	0	0	0	0	0
370	14	9	5	3	2	1	1	0	0	0	0	0	0	0
375	15	9	6	3	2	1	1	0	0	0	0	0	0	0
380	15	10	6	4	2	1	1	0	0	0	0	0	0	0
385	16	10	6	4	2	1	1	0	0	0	0	0	0	0
390	16	10	7	4	2	1	1	0	0	0	0	0	0	0
395	17	11	7	4	3	1	1	0	0	0	0	0	0	0
400	17	11	7	5	3	2	1	1	0	0	0	0	0	0
405	17	12	8	5	3	2	1	1	0	0	0	0	0	0
410	18	12	8	5	3	2	1	1	0	0	0	0	0	0
415	18	12	8	5	3	2	1	1	0	0	0	0	0	0
420	19	13	8	6	3	2	1	1	0	0	0	0	0	0
425	19	13	9	6	4	2	1	1	0	0	0	0	0	0
430	19	13	9	6	4	2	1	1	1	0	0	0	0	0
435	20	14	9	6	4	3	2	1	1	0	0	0	0	0
440	20	14	10	6	4	3	2	1	1	0	0	0	0	0
445	20	14	10	7	4	3	2	1	1	0	0	0	0	0
450	20	15	10	7	5	3	2	1	1	0	0	0	0	0
455	21	15	10	7	5	3	2	1	1	0	0	0	0	0
460	21	15	11	7	5	3	2	1	1	1	0	0	0	0
470	21	16	11	8	5	4	2	2	1	1	0	0	0	0
480	22	16	12	8	6	4	3	2	1	1	0	0	0	0
490	22	16	12	9	6	4	3	2	1	1	0	0	0	0
500	22	17	12	9	6	4	3	2	1	1	1	0	0	0
510	22	17	13	9	7	5	3	2	2	1	1	0	0	0
520	22	17	13	10	7	5	4	2	2	1	1	0	0	0
530	22	17	13	10	7	5	4	3	2	1	1	1	0	0
540	22	17	13	10	7	5	4	3	2	1	1	1	0	0
550	22	17	13	10	8	6	4	3	2	1	1	1	0	0
560	22	17	13	10	8	6	4	3	2	2	1	1	0	0
580	21	17	14	11	8	6	5	3	3	2	1	1	1	0
600	20	17	13	11	8	7	5	4	3	2	1	1	1	1
620	20	16	13	11	9	7	5	4	3	2	2	1	1	1
640	19	16	13	11	9	7	5	4	3	2	2	1	1	1
660	18	15	13	10	9	7	6	4	3	3	2	1	1	1
680	17	15	12	10	8	7	6	4	4	3	2	2	1	1
700	16	14	12	10	8	7	6	5	4	3	2	2	1	1
750	14	12	11	9	8	7	5	5	4	3	2	2	2	1
800	12	10	9	8	7	6	5	4	4	3	3	2	2	1
850	10	9	8	7	6	5	5	4	3	3	3	2	2	1
900	8	7	7	6	5	5	4	4	3	3	2	2	2	1
1000	5	5	5	4	4	4	3	3	3	2	2	2	2	1
1100	4	3	3	2	1	1	2	2	2	2	2	1	1	1

Table A.19. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 40 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	48	23	2	0	0	0	0	0	0	0	0	0	0	0
-5	1251	658	96	4	0	0	0	0	0	0	0	0	0	0
0	6851	3969	772	50	1	0	0	0	0	0	0	0	0	0
5	11424	7181	1783	175	7	0	0	0	0	0	0	0	0	0
10	11353	7629	2315	317	20	1	0	0	0	0	0	0	0	0
15	10392	7369	2628	471	42	2	0	0	0	0	0	0	0	0
20	9511	7039	2852	633	77	5	0	0	0	0	0	0	0	0
25	8735	6686	2997	787	121	11	1	0	0	0	0	0	0	0
30	8050	6328	3073	922	171	20	1	0	0	0	0	0	0	0
35	7444	5977	3094	1032	222	31	3	0	0	0	0	0	0	0
40	6905	5641	3075	1118	271	44	5	0	0	0	0	0	0	0
45	6423	5323	3030	1184	318	59	7	1	0	0	0	0	0	0
50	5991	5026	2968	1234	361	74	11	1	0	0	0	0	0	0
55	5601	4751	2898	1271	401	91	15	2	0	0	0	0	0	0
60	5249	4494	2822	1299	439	109	20	3	0	0	0	0	0	0
65	4928	4257	2743	1319	473	127	25	4	0	0	0	0	0	0
70	4636	4036	2664	1333	506	145	32	5	1	0	0	0	0	0
75	4368	3831	2584	1341	535	164	39	7	1	0	0	0	0	0
80	4123	3640	2505	1344	562	183	47	9	1	0	0	0	0	0
85	3897	3462	2428	1344	587	202	55	12	2	0	0	0	0	0
90	3688	3296	2351	1339	609	221	64	15	3	0	0	0	0	0
95	3495	3140	2276	1331	628	239	74	18	4	1	0	0	0	0
100	3316	2994	2203	1321	645	257	83	22	5	1	0	0	0	0
105	3150	2857	2131	1308	660	274	93	26	6	1	0	0	0	0
110	2996	2729	2062	1292	672	290	104	31	8	2	0	0	0	0
115	2851	2608	1994	1276	682	305	114	36	9	2	0	0	0	0
120	2717	2494	1929	1257	690	319	125	41	11	3	1	0	0	0
125	2591	2386	1865	1237	697	333	135	46	14	3	1	0	0	0
130	2472	2285	1804	1217	701	345	145	52	16	4	1	0	0	0
135	2371	2197	1748	1193	700	352	152	56	18	5	1	0	0	0
140	2285	2121	1696	1168	693	354	156	59	19	5	1	0	0	0
145	2203	2048	1646	1144	687	357	160	62	21	6	2	0	0	0
150	2124	1978	1598	1120	680	359	164	65	22	7	2	0	0	0
155	2049	1911	1552	1096	674	360	168	68	24	7	2	0	0	0
160	1976	1847	1506	1073	667	362	172	71	26	8	2	1	0	0
165	1907	1785	1463	1050	660	364	175	74	27	9	3	1	0	0
170	1840	1725	1420	1028	653	365	179	77	29	10	3	1	0	0
175	1776	1667	1379	1006	646	366	183	80	31	11	3	1	0	0
180	1715	1612	1340	984	639	367	186	83	33	12	4	1	0	0
185	1656	1559	1301	963	632	367	189	87	35	13	4	1	0	0
190	1599	1508	1264	942	624	368	193	90	37	14	4	1	0	0
195	1544	1458	1228	921	617	368	196	93	39	15	5	1	0	0
200	1492	1411	1192	901	609	368	199	96	41	16	5	2	0	0
205	1442	1365	1158	881	601	367	201	99	44	17	[illegible]	2	1	0
210	1393	1321	1125	862	593	367	204	102	46	18	7	2	1	0
215	1347	1278	1093	843	585	366	206	105	48	20	7	2	1	0
220	1302	1237	1062	824	577	365	209	108	50	21	8	3	1	0
225	1259	1198	1032	805	569	364	211	110	52	23	9	3	1	0
230	1218	1160	1003	787	561	362	213	113	55	24	10	3	1	0
235	1178	1123	975	769	552	361	214	116	57	25	10	4	1	0
240	1140	1088	947	752	544	359	216	118	59	27	11	4	1	0
245	1103	1054	920	734	535	357	217	121	61	28	12	5	2	1
250	1067	1021	895	718	527	354	218	123	63	30	13	5	2	1
255	1033	989	869	701	519	352	219	125	66	32	14	6	2	1
260	1000	959	845	685	510	349	220	127	68	33	15	6	2	1
265	968	929	822	669	502	347	220	129	70	35	16	7	3	1
270	938	901	799	653	493	344	221	131	72	36	17	7	3	1
275	908	873	776	638	495	340	221	133	74	38	18	8	3	1
280	880	847	755	623	476	337	221	134	76	39	19	8	4	1
285	853	821	734	608	468	334	221	136	77	41	20	9	4	2
290	826	797	714	594	460	330	221	137	79	42	21	10	4	2
295	801	773	694	580	451	327	220	138	81	44	22	10	5	2
300	776	750	675	566	443	323	220	139	82	45	23	11	5	2
305	753	727	656	553	435	320	219	140	84	47	24	12	5	2

Table A.19. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
310	730	706	638	540	427	316	218	141	85	48	26	13	6	3
315	708	685	621	527	419	312	217	142	87	50	27	13	6	3
320	687	665	604	514	411	308	216	142	88	51	28	14	7	3
325	666	646	588	502	403	304	215	143	89	52	29	15	7	3
330	646	627	572	490	395	300	214	143	90	54	30	16	8	4
335	627	609	556	478	388	296	212	144	91	55	31	16	8	4
340	609	591	541	467	380	292	211	144	92	56	32	17	9	4
345	591	574	527	456	373	287	209	144	93	57	33	18	9	5
350	574	558	512	445	365	283	208	144	94	58	34	19	10	5
355	557	542	499	434	358	279	206	144	95	59	35	20	10	5
360	541	527	485	424	351	275	204	143	96	60	36	20	11	6
365	525	512	473	414	344	271	202	143	96	61	37	21	11	6
370	510	497	460	404	337	266	200	143	97	62	38	22	12	6
375	496	483	448	394	330	262	198	142	97	63	39	23	13	7
380	482	470	436	385	323	258	196	142	97	64	40	23	13	7
385	468	457	425	376	316	254	194	141	98	64	40	24	14	7
390	455	444	413	367	310	250	192	140	98	65	41	25	14	8
395	442	432	403	358	303	246	189	140	98	66	42	26	15	8
400	430	420	392	349	297	241	187	139	98	66	43	26	15	9
405	418	409	382	341	291	237	185	138	98	67	43	27	16	9
410	406	398	372	333	285	233	183	137	98	67	44	28	17	10
415	395	387	362	325	279	229	180	136	98	68	45	28	17	10
420	384	376	353	317	273	225	178	135	98	68	45	29	18	10
425	374	366	344	310	267	221	176	134	98	68	46	29	18	11
430	364	356	335	302	262	217	173	133	97	69	46	30	19	11
435	354	347	326	295	256	213	171	131	97	69	47	31	19	12
440	344	338	318	288	251	210	169	130	97	69	47	31	20	12
445	335	329	310	281	245	206	166	129	96	69	48	32	20	12
450	326	320	302	275	240	202	164	128	96	69	48	32	21	13
455	317	312	294	268	235	198	161	126	95	69	48	33	21	13
460	309	303	287	262	230	195	159	125	95	69	49	33	22	14
465	301	295	280	256	225	191	157	124	94	69	49	33	22	14
470	293	288	273	250	220	188	154	122	94	69	49	34	22	14
475	285	280	266	244	216	184	152	121	93	69	49	34	23	15
480	278	273	259	238	211	181	149	119	92	69	50	35	23	15
485	271	266	253	232	206	177	147	118	92	69	50	35	24	15
490	264	259	247	227	202	174	145	117	91	68	50	35	24	16
495	257	253	240	222	199	171	142	115	90	68	50	35	24	16
500	250	246	235	216	193	167	140	114	89	68	50	36	25	17
510	237	234	221	206	185	161	136	111	88	67	50	36	25	17
520	225	222	212	197	177	155	131	108	86	67	50	37	26	18
530	214	211	202	188	170	149	127	105	84	66	50	37	26	18
540	204	201	192	179	162	143	123	102	83	65	50	37	27	19
550	194	191	183	171	156	138	118	99	81	64	49	37	27	19
560	184	182	175	163	149	132	114	96	79	63	49	37	27	20
570	175	173	166	156	143	127	110	93	77	62	48	37	28	20
580	167	165	159	149	137	122	106	90	75	61	48	37	28	20
590	159	157	151	142	131	117	103	88	73	60	47	37	28	21
600	151	149	144	136	125	113	99	85	71	58	47	36	28	21
610	144	142	137	130	120	109	95	82	69	57	46	36	28	21
620	137	136	131	124	115	104	92	80	67	56	45	36	28	21
640	125	123	119	113	105	96	85	75	64	53	44	35	28	21
660	113	112	109	104	97	89	79	70	60	51	42	34	27	21
680	103	102	99	95	89	82	74	65	57	48	40	33	27	21
700	94	93	91	87	81	75	68	61	53	46	39	32	26	21
720	86	85	83	79	75	69	63	57	50	43	37	31	25	21
740	78	78	76	73	69	64	59	53	47	41	35	30	25	20
760	71	71	69	67	63	59	54	49	44	38	33	28	24	20
780	65	65	63	61	58	54	50	46	41	36	31	27	23	19
800	60	59	59	56	54	50	47	43	38	34	30	26	22	18

Table A.19. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
850	48	48	47	45	44	41	38	35	32	29	26	23	20	17
900	39	39	38	37	35	34	32	29	27	25	22	20	17	15
950	31	31	31	30	29	28	26	25	23	21	19	17	15	13
1000	26	25	25	25	24	23	22	20	19	18	16	15	13	12
1100	17	17	17	16	16	15	15	14	13	13	12	11	10	9
1200	11	11	11	11	11	11	10	10	9	9	8	8	7	7
1300	8	8	8	8	7	7	7	7	7	6	6	6	5	5
1400	5	5	5	5	5	5	5	5	5	4	4	4	4	4
1500	4	4	4	4	4	4	3	3	3	3	3	3	3	3
1600	3	3	3	3	2	2	2	2	2	2	2	2	2	2
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
285	1	0	0	0	0	0	0	0	0	0	0	0	0	0
290	1	0	0	0	0	0	0	0	0	0	0	0	0	0
295	1	0	0	0	0	0	0	0	0	0	0	0	0	0
300	1	0	0	0	0	0	0	0	0	0	0	0	0	0
305	1	0	0	0	0	0	0	0	0	0	0	0	0	0
310	1	0	0	0	0	0	0	0	0	0	0	0	0	0
315	1	0	0	0	0	0	0	0	0	0	0	0	0	0
320	1	1	0	0	0	0	0	0	0	0	0	0	0	0
325	1	1	0	0	0	0	0	0	0	0	0	0	0	0
330	2	1	0	0	0	0	0	0	0	0	0	0	0	0
335	2	1	0	0	0	0	0	0	0	0	0	0	0	0
340	2	1	0	0	0	0	0	0	0	0	0	0	0	0
345	2	1	0	0	0	0	0	0	0	0	0	0	0	0
350	2	1	0	0	0	0	0	0	0	0	0	0	0	0
355	2	1	0	0	0	0	0	0	0	0	0	0	0	0
360	3	1	1	0	0	0	0	0	0	0	0	0	0	0
365	3	1	1	0	0	0	0	0	0	0	0	0	0	0
370	3	1	1	0	0	0	0	0	0	0	0	0	0	0
375	3	2	1	0	0	0	0	0	0	0	0	0	0	0
380	4	2	1	0	0	0	0	0	0	0	0	0	0	0
385	4	2	1	0	0	0	0	0	0	0	0	0	0	0
390	4	2	1	0	0	0	0	0	0	0	0	0	0	0
395	4	2	1	0	0	0	0	0	0	0	0	0	0	0
400	5	2	1	1	0	0	0	0	0	0	0	0	0	0
405	5	3	1	1	0	0	0	0	0	0	0	0	0	0
410	5	3	1	1	0	0	0	0	0	0	0	0	0	0
415	6	3	1	1	0	0	0	0	0	0	0	0	0	0
420	6	3	2	1	0	0	0	0	0	0	0	0	0	0
425	6	3	2	1	0	0	0	0	0	0	0	0	0	0
430	6	4	2	1	0	0	0	0	0	0	0	0	0	0
435	7	4	2	1	1	0	0	0	0	0	0	0	0	0
440	7	4	2	1	1	0	0	0	0	0	0	0	0	0
445	7	4	2	1	1	0	0	0	0	0	0	0	0	0
450	8	4	2	1	1	0	0	0	0	0	0	0	0	0
455	8	5	3	1	1	0	0	0	0	0	0	0	0	0
460	8	5	3	1	1	0	0	0	0	0	0	0	0	0
465	9	5	3	2	1	0	0	0	0	0	0	0	0	0
470	9	5	3	2	1	0	0	0	0	0	0	0	0	0
475	9	6	3	2	1	1	0	0	0	0	0	0	0	0
480	10	6	3	2	1	1	0	0	0	0	0	0	0	0
485	10	6	4	2	1	1	0	0	0	0	0	0	0	0
490	10	6	4	2	1	1	0	0	0	0	0	0	0	0
495	10	6	4	2	1	1	0	0	0	0	0	0	0	0
500	11	7	4	2	1	1	0	0	0	0	0	0	0	0
510	11	7	4	3	2	1	0	0	0	0	0	0	0	0
520	12	8	5	3	2	1	1	0	0	0	0	0	0	0
530	12	8	5	3	2	1	1	0	0	0	0	0	0	0
540	13	9	5	3	2	1	1	0	0	0	0	0	0	0
550	13	9	6	4	2	1	1	0	0	0	0	0	0	0
560	14	9	6	4	3	2	1	1	0	0	0	0	0	0

Table A.19. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
570	14	10	7	4	3	2	1	1	0	0	0	0	0	0
580	14	10	7	5	3	2	1	1	0	0	0	0	0	0
590	15	10	7	5	3	2	1	1	0	0	0	0	0	0
600	15	11	7	5	3	2	1	1	1	0	0	0	0	0
610	15	11	8	5	4	2	2	1	1	0	0	0	0	0
620	16	11	9	6	4	3	2	1	1	0	0	0	0	0
640	16	12	9	6	4	3	2	1	1	0	0	0	0	0
660	16	12	9	6	5	3	2	1	1	1	0	0	0	0
680	16	12	9	7	5	3	2	2	1	1	0	0	0	0
700	16	13	10	7	5	4	3	2	1	1	1	0	0	0
720	16	13	10	7	6	4	3	2	1	1	1	0	0	0
740	16	13	10	8	6	4	3	2	2	1	1	1	0	0
760	16	13	10	8	6	4	3	2	2	1	1	1	0	0
780	16	13	10	8	6	5	4	3	2	1	1	1	0	0
800	15	12	10	8	6	5	4	3	2	1	1	1	1	0
850	14	12	10	8	6	5	4	3	2	2	1	1	1	1
900	13	11	9	8	6	5	4	3	3	2	2	1	1	1
950	12	10	9	7	6	5	4	3	3	2	2	1	1	1
1000	10	9	8	7	6	5	4	3	3	2	2	1	1	1
1100	8	7	6	6	5	4	4	3	3	2	2	2	1	1
1200	6	6	5	5	4	4	3	3	2	2	2	2	1	1
1300	5	4	4	4	3	3	3	2	2	2	2	1	1	1
1400	3	3	3	3	2	2	2	2	2	2	1	1	1	1
1500	2	2	2	2	2	2	2	1	1	1	1	1	1	1
1600	2	2	2	2	1	1	1	1	1	1	1	1	1	1

Table A.20. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 50 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	20	9	1	0	0	0	0	0	0	0	0	0	0	0
-5	841	411	48	1	0	0	0	0	0	0	0	0	0	0
0	5661	3045	474	21	0	0	0	0	0	0	0	0	0	0
5	9792	5720	1140	78	2	0	0	0	0	0	0	0	0	0
10	9771	6122	1506	145	6	0	0	0	0	0	0	0	0	0
15	9084	6034	1769	229	13	0	0	0	0	0	0	0	0	0
20	8440	5883	1993	328	26	1	0	0	0	0	0	0	0	0
25	7855	5696	2172	435	46	3	0	0	0	0	0	0	0	0
30	7327	5487	2304	542	72	5	0	0	0	0	0	0	0	0
35	6850	5265	2392	642	102	10	1	0	0	0	0	0	0	0
40	6418	5040	2441	729	134	15	1	0	0	0	0	0	0	0
45	6026	4817	2460	803	167	22	2	0	0	0	0	0	0	0
50	5670	4600	2456	863	200	30	3	0	0	0	0	0	0	0
55	5345	4391	2435	912	230	39	5	0	0	0	0	0	0	0
60	5048	4193	2403	950	259	49	6	1	0	0	0	0	0	0
65	4775	4005	2363	981	286	59	9	1	0	0	0	0	0	0
70	4523	3827	2318	1005	312	69	11	1	0	0	0	0	0	0
75	4292	3660	2271	1025	336	80	14	2	0	0	0	0	0	0
80	4077	3503	2222	1040	359	92	17	2	0	0	0	0	0	0
85	3878	3355	2171	1052	381	103	21	3	0	0	0	0	0	0
90	3694	3215	2121	1060	401	115	25	4	1	0	0	0	0	0
95	3521	3083	2070	1066	421	127	30	5	1	0	0	0	0	0
100	3361	2959	2020	1069	438	139	34	7	1	0	0	0	0	0
105	3211	2842	1970	1070	455	152	40	8	1	0	0	0	0	0
110	3070	2730	1920	1068	470	164	45	10	2	0	0	0	0	0
115	2938	2625	1872	1065	494	175	51	12	2	0	0	0	0	0
120	2814	2525	1824	1061	496	187	57	14	3	0	0	0	0	0
125	2697	2430	1777	1054	508	199	63	16	3	1	0	0	0	0
130	2588	2340	1731	1047	518	210	69	19	4	1	0	0	0	0
135	2484	2254	1686	1038	527	220	76	21	5	1	0	0	0	0
140	2386	2173	1641	1028	534	230	82	24	6	1	0	0	0	0
145	2293	2095	1598	1018	541	240	89	28	7	2	0	0	0	0
150	2206	2022	1556	1006	547	249	96	31	8	2	0	0	0	0
155	2123	1951	1515	994	551	258	102	34	10	2	0	0	0	0
160	2044	1884	1475	982	555	266	109	38	11	3	1	0	0	0
165	1969	1820	1436	968	558	274	115	41	13	3	1	0	0	0
170	1902	1762	1400	954	558	280	120	44	14	4	1	0	0	0
175	1847	1713	1366	938	554	281	123	46	15	4	1	0	0	0
180	1793	1665	1334	922	550	283	125	48	16	5	1	0	0	0
185	1742	1620	1303	906	545	284	128	50	17	5	1	0	0	0
190	1692	1575	1272	891	541	285	130	52	18	5	1	0	0	0
195	1643	1532	1243	876	537	286	133	54	19	6	2	0	0	0
200	1597	1491	1213	861	533	287	135	55	20	6	2	0	0	0
205	1551	1450	1185	847	529	288	138	57	21	7	2	0	0	0
210	1508	1411	1158	832	524	289	140	59	22	7	2	1	0	0
215	1465	1373	1131	818	520	290	142	61	23	8	2	1	0	0
220	1424	1337	1105	804	515	291	145	63	24	8	2	1	0	0
225	1385	1301	1079	790	511	291	147	65	26	9	3	1	0	0
230	1346	1266	1054	776	506	292	149	67	27	10	3	1	0	0
235	1309	1233	1030	763	501	292	151	69	28	10	3	1	0	0
240	1273	1200	1006	750	497	293	153	71	30	11	4	1	0	0
245	1238	1169	983	737	492	293	155	73	31	12	4	1	0	0
250	1204	1138	960	724	487	293	157	75	32	12	4	1	0	0
255	1172	1108	938	711	482	293	159	77	34	13	5	1	0	0
260	1140	1080	917	698	477	292	161	79	35	14	5	2	0	0
265	1109	1052	896	686	472	292	162	81	36	15	5	2	1	0
270	1080	1024	875	674	467	291	164	83	38	16	6	2	1	0
275	1051	998	855	662	462	291	165	85	39	16	6	2	1	0
280	1023	972	836	650	457	290	167	87	41	17	7	2	1	0

Table A.20. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
285	996	948	817	638	451	289	168	88	42	18	7	3	1	0
290	969	924	798	626	446	283	169	90	43	19	8	3	1	0
295	944	900	780	615	441	287	170	92	45	20	8	3	1	0
300	919	877	763	604	435	286	171	93	46	21	9	3	1	0
305	895	855	745	593	430	285	172	95	48	22	9	4	1	0
310	872	834	729	582	425	283	173	96	49	23	10	4	1	0
315	850	813	712	571	419	282	174	98	50	24	10	4	1	0
320	828	793	696	561	414	280	174	99	52	25	11	4	2	1
325	807	773	680	550	409	279	175	101	53	26	12	5	2	1
330	786	754	665	540	403	277	175	102	54	27	12	5	2	1
335	766	735	650	530	398	275	175	103	56	28	13	5	2	1
340	747	717	636	520	393	273	176	104	57	29	13	6	2	1
345	728	700	622	510	387	271	176	105	58	30	14	6	2	1
350	709	683	608	501	382	269	176	106	59	31	15	7	3	1
355	692	666	594	491	376	267	176	107	61	32	15	7	3	1
360	675	650	581	482	371	265	176	108	62	33	16	7	3	1
365	658	634	568	473	366	263	176	109	63	34	17	8	3	1
370	642	619	555	464	361	261	175	110	64	35	17	8	4	1
375	626	604	543	455	355	258	175	111	65	36	18	9	4	2
380	610	590	531	447	350	256	175	111	66	37	19	9	4	2
395	596	576	520	438	345	254	174	112	67	37	20	10	4	2
390	581	562	508	430	340	251	174	112	68	38	20	10	5	2
395	567	549	497	421	335	249	173	113	69	39	21	11	5	2
400	553	536	486	413	330	246	172	113	70	40	22	11	5	2
405	540	523	475	406	325	244	172	114	70	41	22	11	6	2
410	527	511	465	398	320	241	171	114	71	42	23	12	6	3
415	515	499	455	390	315	239	170	114	72	43	24	12	6	3
420	502	487	445	383	310	236	169	114	73	43	24	13	6	3
425	490	476	436	375	305	233	168	114	73	44	25	13	7	3
430	479	465	426	368	300	231	167	114	74	45	26	14	7	3
435	468	454	417	361	295	228	166	114	74	46	26	14	7	4
440	457	444	408	354	291	225	165	114	75	46	27	15	8	4
445	446	434	399	347	286	223	164	114	75	47	28	15	8	4
450	436	424	391	341	281	220	163	114	76	48	28	16	9	4
455	426	414	382	334	277	217	162	114	76	48	29	16	9	5
460	416	405	374	328	272	215	160	114	77	49	30	17	9	5
465	406	396	366	321	268	212	159	114	77	49	30	17	10	5
470	397	387	359	315	264	209	158	113	77	50	31	18	10	5
475	388	378	351	309	259	207	157	113	77	50	31	18	10	5
480	379	370	343	303	255	204	155	113	78	51	32	19	11	6
485	371	362	336	297	251	201	154	112	78	51	32	19	11	6
490	362	354	329	292	247	199	153	112	78	52	33	20	11	6
495	354	346	322	286	243	196	151	111	78	52	33	20	12	7
500	346	338	315	281	238	193	150	111	78	53	34	21	12	7
505	338	331	309	275	235	191	148	110	78	53	34	21	12	7
510	331	323	302	270	231	188	147	110	78	53	35	22	13	7
515	324	316	296	265	227	186	145	109	78	53	35	22	13	8
520	316	310	290	260	223	183	144	108	78	54	35	22	14	8
525	309	303	284	255	219	181	142	108	78	54	36	23	14	8
530	303	296	279	250	215	179	141	107	78	54	36	23	14	8
535	296	290	272	245	212	175	139	106	78	54	37	24	15	9
540	290	284	267	241	209	173	138	105	77	55	37	24	15	9
545	283	278	261	236	205	171	136	105	77	55	37	24	15	9
550	277	272	256	231	201	168	135	104	77	55	37	25	16	9
560	265	260	245	223	194	163	132	102	77	55	38	25	16	10
570	254	249	236	214	188	158	129	101	76	55	38	26	17	10
580	243	239	226	206	181	154	126	99	75	55	39	26	17	11
590	233	229	217	199	175	149	123	97	74	55	39	27	18	11
600	223	220	208	191	169	145	120	96	74	55	39	27	18	12
610	214	211	200	184	154	140	117	94	73	55	40	28	19	12

Table A.20. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
620	205	202	192	177	158	136	114	92	72	54	40	28	19	13
630	197	194	185	171	153	132	111	90	71	54	40	29	20	13
640	189	186	178	164	147	129	108	88	70	54	40	29	20	14
650	181	179	171	158	142	124	105	86	69	53	40	29	20	14
660	174	171	164	152	137	120	102	84	68	53	40	29	21	14
670	167	165	158	147	133	117	100	83	67	52	40	29	21	15
680	160	158	152	141	128	113	97	81	65	52	39	29	21	15
690	154	152	146	136	124	109	94	79	64	51	39	29	22	15
700	148	146	140	131	120	106	92	77	63	50	39	29	22	16
710	142	140	135	126	115	103	89	75	62	50	39	29	22	16
720	137	135	130	122	112	99	87	73	61	49	38	29	22	16
740	126	125	120	113	104	93	82	70	58	47	38	29	22	16
760	117	115	112	105	97	88	77	66	56	46	37	29	22	17
780	108	107	103	98	91	82	73	63	53	44	36	28	22	17
800	100	99	96	91	85	77	68	60	51	43	35	28	22	17
820	93	92	89	85	79	72	65	57	49	41	34	27	22	17
840	86	85	83	79	74	69	61	54	46	39	33	27	21	17
860	80	79	77	73	69	63	57	51	44	38	32	26	21	17
880	74	73	72	68	64	59	54	48	42	36	31	25	21	17
900	69	68	67	64	60	56	51	45	40	35	29	25	20	16
950	57	57	56	54	51	47	44	39	35	31	27	23	19	16
1000	48	48	47	45	43	40	37	34	31	27	24	21	18	15
1050	40	40	39	38	36	34	32	29	27	24	21	19	16	14
1100	34	34	33	32	31	29	27	25	23	21	19	17	15	13
1150	29	28	28	27	26	25	24	22	20	18	17	15	13	12
1200	24	24	24	23	22	21	20	19	18	16	15	13	12	10
1300	17	17	17	17	16	16	15	14	13	12	11	10	9	8
1400	13	13	12	12	12	12	11	11	10	9	9	8	7	7
1500	9	9	9	9	9	8	8	8	7	7	7	6	6	5
1600	7	7	7	7	6	6	6	6	6	5	5	5	4	4
1700	5	5	5	5	5	5	5	4	4	4	4	4	3	3
1800	4	4	4	4	4	3	3	3	3	3	3	3	3	3
1900	3	3	3	3	3	3	3	2	2	2	2	2	2	2
2000	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
370	1	0	0	0	0	0	0	0	0	0	0	0	0	0
375	1	0	0	0	0	0	0	0	0	0	0	0	0	0
380	1	0	0	0	0	0	0	0	0	0	0	0	0	0
385	1	0	0	0	0	0	0	0	0	0	0	0	0	0
390	1	0	0	0	0	0	0	0	0	0	0	0	0	0
395	1	0	0	0	0	0	0	0	0	0	0	0	0	0
400	1	0	0	0	0	0	0	0	0	0	0	0	0	0
405	1	0	0	0	0	0	0	0	0	0	0	0	0	0
410	1	0	0	0	0	0	0	0	0	0	0	0	0	0
415	1	1	0	0	0	0	0	0	0	0	0	0	0	0
420	1	1	0	0	0	0	0	0	0	0	0	0	0	0
425	1	1	0	0	0	0	0	0	0	0	0	0	0	0
430	2	1	0	0	0	0	0	0	0	0	0	0	0	0
435	2	1	0	0	0	0	0	0	0	0	0	0	0	0
440	2	1	0	0	0	0	0	0	0	0	0	0	0	0
445	2	1	0	0	0	0	0	0	0	0	0	0	0	0
450	2	1	0	0	0	0	0	0	0	0	0	0	0	0
455	2	1	0	0	0	0	0	0	0	0	0	0	0	0
460	2	1	0	0	0	0	0	0	0	0	0	0	0	0
465	2	1	1	0	0	0	0	0	0	0	0	0	0	0

Table A.20. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles).													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
470	3	1	1	0	0	0	0	0	0	0	0	0	0	0
475	3	1	1	0	0	0	0	0	0	0	0	0	0	0
480	3	1	1	0	0	0	0	0	0	0	0	0	0	0
485	3	2	1	0	0	0	0	0	0	0	0	0	0	0
490	3	2	1	0	0	0	0	0	0	0	0	0	0	0
495	3	2	1	0	0	0	0	0	0	0	0	0	0	0
500	4	2	1	0	0	0	0	0	0	0	0	0	0	0
505	4	2	1	0	0	0	0	0	0	0	0	0	0	0
510	4	2	1	0	0	0	0	0	0	0	0	0	0	0
515	4	2	1	1	0	0	0	0	0	0	0	0	0	0
520	4	2	1	1	0	0	0	0	0	0	0	0	0	0
525	5	2	1	1	0	0	0	0	0	0	0	0	0	0
530	5	3	1	1	0	0	0	0	0	0	0	0	0	0
535	5	3	1	1	0	0	0	0	0	0	0	0	0	0
540	5	3	1	1	0	0	0	0	0	0	0	0	0	0
545	5	3	2	1	0	0	0	0	0	0	0	0	0	0
550	5	3	2	1	0	0	0	0	0	0	0	0	0	0
560	6	3	2	1	0	0	0	0	0	0	0	0	0	0
570	6	4	2	1	1	0	0	0	0	0	0	0	0	0
580	7	4	2	1	1	0	0	0	0	0	0	0	0	0
590	7	4	2	1	1	0	0	0	0	0	0	0	0	0
600	7	5	3	1	1	0	0	0	0	0	0	0	0	0
610	8	5	3	2	1	0	0	0	0	0	0	0	0	0
620	8	5	3	2	1	1	0	0	0	0	0	0	0	0
630	9	5	3	2	1	1	0	0	0	0	0	0	0	0
640	9	6	4	2	1	1	0	0	0	0	0	0	0	0
650	9	6	4	2	1	1	0	0	0	0	0	0	0	0
660	10	6	4	2	1	1	0	0	0	0	0	0	0	0
670	10	7	4	3	2	1	1	0	0	0	0	0	0	0
680	10	7	4	3	2	1	1	0	0	0	0	0	0	0
690	11	7	5	3	2	1	1	0	0	0	0	0	0	0
700	11	7	5	3	2	1	1	0	0	0	0	0	0	0
710	11	8	5	3	2	1	1	0	0	0	0	0	0	0
720	11	8	5	3	2	1	1	1	0	0	0	0	0	0
740	12	8	6	4	3	2	1	1	0	0	0	0	0	0
760	12	9	6	4	3	2	1	1	0	0	0	0	0	0
780	12	9	6	4	3	2	1	1	1	0	0	0	0	0
800	13	9	7	5	3	2	1	1	1	0	0	0	0	0
820	13	10	7	5	4	2	2	1	1	0	0	0	0	0
840	13	10	7	5	4	3	2	1	1	1	0	0	0	0
860	13	10	7	6	4	3	2	1	1	1	0	0	0	0
880	13	10	8	6	4	3	2	1	1	1	0	0	0	0
900	13	10	8	6	4	3	2	2	1	1	1	0	0	0
950	13	10	8	6	5	4	3	2	1	1	1	0	0	0
1000	12	10	8	6	5	4	3	2	2	1	1	1	0	0
1050	12	10	8	6	5	4	3	2	2	1	1	1	1	0
1100	11	9	8	6	5	4	3	3	2	2	1	1	1	0
1150	10	9	7	6	5	4	3	3	2	2	1	1	1	1
1200	9	8	7	6	5	4	3	3	2	2	1	1	1	1
1300	8	7	6	5	4	4	3	3	2	2	1	1	1	1
1400	6	5	5	4	4	3	3	2	2	2	1	1	1	1
1500	5	4	4	4	3	3	3	2	2	2	1	1	1	1
1600	4	4	3	3	3	2	2	2	2	1	1	1	1	1
1700	3	3	3	2	2	2	2	2	1	1	1	1	1	1
1800	2	2	2	2	2	2	1	1	1	1	1	1	1	1
1900	2	2	2	2	1	1	1	1	1	1	1	1	1	1
2000	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table A.21. Estimated radiation exposures from fallout, assuming large yield weapon, 7-d exposure (R), and effective fallout wind speed of 60 mph.

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	9	4	0	0	0	0	0	0	0	0	0	0	0	0
-5	580	264	25	0	0	0	0	0	0	0	0	0	0	0
0	4816	2410	302	9	0	0	0	0	0	0	0	0	0	0
5	8562	4657	750	36	1	0	0	0	0	0	0	0	0	0
10	8546	5000	1001	69	2	0	0	0	0	0	0	0	0	0
15	8038	5005	1208	113	4	0	0	0	0	0	0	0	0	0
20	7554	4959	1403	171	9	0	0	0	0	0	0	0	0	0
25	7104	4875	1576	240	17	1	0	0	0	0	0	0	0	0
30	6688	4764	1722	316	29	1	0	0	0	0	0	0	0	0
35	6306	4634	1838	394	46	3	0	0	0	0	0	0	0	0
40	5955	4491	1925	469	65	5	0	0	0	0	0	0	0	0
45	5633	4340	1985	539	87	8	0	0	0	0	0	0	0	0
50	5336	4186	2022	601	110	12	1	0	0	0	0	0	0	0
55	5062	4033	2039	654	133	17	1	0	0	0	0	0	0	0
60	4809	3882	2041	699	156	23	2	0	0	0	0	0	0	0
65	4575	3735	2032	737	178	29	3	0	0	0	0	0	0	0
70	4358	3593	2014	767	199	35	4	0	0	0	0	0	0	0
75	4156	3458	1990	793	219	42	6	1	0	0	0	0	0	0
80	3969	3328	1963	814	237	49	7	1	0	0	0	0	0	0
85	3793	3205	1932	831	255	56	9	1	0	0	0	0	0	0
90	3629	3087	1899	846	272	63	11	1	0	0	0	0	0	0
95	3476	2975	1866	857	289	71	13	2	0	0	0	0	0	0
100	3332	2869	1831	867	304	79	15	2	0	0	0	0	0	0
105	3197	2768	1797	874	319	87	18	3	0	0	0	0	0	0
110	3070	2672	1762	880	333	95	21	3	0	0	0	0	0	0
115	2950	2580	1726	884	346	104	24	4	1	0	0	0	0	0
120	2836	2493	1692	887	359	112	27	5	1	0	0	0	0	0
125	2729	2409	1657	888	371	121	31	6	1	0	0	0	0	0
130	2628	2330	1622	888	382	129	34	7	1	0	0	0	0	0
135	2532	2254	1588	887	392	137	38	8	1	0	0	0	0	0
140	2441	2181	1555	884	402	145	42	10	2	0	0	0	0	0
145	2355	2111	1522	881	410	154	46	11	2	0	0	0	0	0
150	2273	2045	1489	877	418	161	50	13	3	0	0	0	0	0
155	2195	1981	1457	872	426	169	55	14	3	1	0	0	0	0
160	2121	1920	1425	867	432	177	59	16	4	1	0	0	0	0
165	2050	1862	1394	861	438	184	64	18	4	1	0	0	0	0
170	1983	1805	1364	854	444	191	68	20	5	1	0	0	0	0
175	1918	1752	1334	847	448	198	73	22	6	1	0	0	0	0
180	1857	1700	1304	839	452	204	77	25	7	1	0	0	0	0
185	1798	1650	1276	831	456	211	82	27	7	2	0	0	0	0
190	1741	1602	1248	822	459	217	87	29	8	2	0	0	0	0
195	1689	1556	1220	813	461	222	91	32	9	2	1	0	0	0
200	1636	1512	1193	804	463	228	96	34	10	3	1	0	0	0
205	1588	1470	1167	795	464	232	100	37	12	3	1	0	0	0
210	1549	1436	1144	783	461	233	101	38	12	3	1	0	0	0
215	1512	1403	1122	772	458	234	103	39	13	4	1	0	0	0
220	1475	1371	1099	761	455	235	105	40	13	4	1	0	0	0
225	1440	1339	1078	751	452	236	106	42	14	4	1	0	0	0
230	1405	1309	1057	740	449	237	109	43	15	4	1	0	0	0

Table A.21. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
235	1372	1279	1036	730	447	239	110	44	15	5	1	0	0	0
240	1339	1250	1016	719	444	238	112	45	16	5	1	0	0	0
245	1307	1221	996	709	441	239	113	47	17	5	1	0	0	0
250	1276	1194	977	699	438	240	115	48	18	6	2	0	0	0
255	1246	1167	958	689	435	240	117	50	18	6	2	0	0	0
260	1217	1141	939	679	432	241	118	51	19	6	2	0	0	0
265	1189	1115	921	670	429	241	120	52	20	7	2	1	0	0
270	1161	1090	903	660	425	242	121	54	21	7	2	1	0	0
275	1134	1066	886	651	422	242	123	55	22	8	2	1	0	0
280	1103	1043	869	641	419	242	124	56	23	8	3	1	0	0
285	1082	1019	852	632	416	243	126	58	24	9	3	1	0	0
290	1057	997	836	623	412	243	127	59	24	9	3	1	0	0
295	1033	975	820	614	409	243	129	61	25	9	3	1	0	0
300	1010	954	804	605	406	243	130	62	26	10	3	1	0	0
305	987	933	789	596	402	243	131	63	27	11	4	1	0	0
310	964	913	773	587	399	243	132	65	28	11	4	1	0	0
315	943	993	759	578	395	243	134	66	29	12	4	1	0	0
320	921	873	744	570	392	242	135	67	30	12	4	1	0	0
325	901	855	730	561	388	242	136	69	31	13	5	2	0	0
330	881	836	716	553	385	242	137	70	32	13	5	2	1	0
335	861	818	702	545	381	241	139	71	33	14	5	2	1	0
340	842	801	689	536	378	241	139	72	34	15	6	2	1	0
345	823	784	676	528	374	240	140	74	35	15	6	2	1	0
350	805	767	663	520	370	239	140	75	36	16	6	2	1	0
355	788	751	651	512	367	239	141	76	37	16	7	2	1	0
360	770	735	638	505	363	238	142	77	38	17	7	3	1	0
365	754	719	626	497	359	237	142	78	39	18	7	3	1	0
370	737	704	614	489	356	236	143	79	40	18	8	3	1	0
375	721	690	603	482	352	235	144	80	41	19	8	3	1	0
380	706	675	591	474	348	234	144	81	42	20	9	3	1	0
385	691	661	580	467	345	233	145	82	43	20	9	4	1	0
390	676	647	569	460	341	232	145	83	44	21	9	4	1	0
395	661	634	559	453	337	231	145	84	45	22	10	4	2	1
400	647	621	548	446	333	230	146	95	46	23	10	4	2	1
405	634	608	538	439	330	228	146	86	46	23	11	5	2	1
410	620	596	528	432	326	227	146	87	47	24	11	5	2	1
415	607	584	518	425	322	226	146	87	48	25	12	5	2	1
420	594	572	509	418	319	224	146	88	49	25	12	5	2	1
425	582	560	493	412	315	223	146	89	50	26	13	6	2	1
430	570	549	490	405	311	221	146	89	51	27	13	6	2	1
435	558	538	481	399	307	220	146	90	51	27	13	6	3	1
440	546	527	472	393	304	219	146	91	52	28	14	6	3	1
445	535	516	463	387	300	217	146	91	53	29	14	7	3	1
450	524	506	455	380	297	215	145	92	54	29	15	7	3	1
455	513	496	446	374	293	214	145	92	54	30	15	7	3	1
460	503	486	439	368	289	212	145	92	55	31	16	8	3	1
465	493	476	430	363	286	210	145	93	56	31	16	8	4	2
470	483	467	422	357	282	209	144	93	56	32	17	8	4	2
475	473	458	414	351	279	207	144	94	57	32	17	9	4	2
430	463	449	407	346	275	205	143	94	58	33	18	9	4	2

AD-A060 440 OAK RIDGE NATIONAL LAB TENN F/G 15/6

MANUAL ESTIMATION OF FALLOUT CASUALTIES.(U)

AUG 78 K S GANT, C M HAALAND DCPA01-76-C-0373

UNCLASSIFIED ORNL-5370 NL

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Table A. 21. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
485	454	440	399	340	272	203	143	94	58	34	18	9	4	2
490	445	431	392	335	268	202	142	94	59	34	19	10	5	2
495	436	423	385	329	255	200	142	95	59	35	19	10	5	2
500	427	414	378	324	261	198	141	95	60	35	20	10	5	2
505	419	406	371	319	258	196	141	95	60	36	20	11	5	2
510	411	399	364	314	255	194	140	95	61	36	21	11	6	3
515	403	391	358	309	251	193	139	95	61	37	21	11	6	3
520	395	383	351	304	248	191	139	95	61	37	22	12	6	3
525	387	376	345	299	245	189	138	95	62	38	22	12	6	3
530	379	369	339	294	241	187	137	95	62	38	22	12	6	3
535	372	362	333	289	238	185	136	95	62	39	23	13	7	3
540	365	355	327	285	235	183	136	95	63	39	23	13	7	4
545	358	348	321	280	232	182	135	95	63	40	24	13	7	4
550	351	342	315	276	229	180	134	95	63	40	24	14	7	4
555	344	335	310	271	226	178	133	94	64	41	25	14	8	4
560	337	329	304	267	223	176	132	94	64	41	25	14	8	4
565	331	323	299	263	219	174	131	94	64	41	25	15	8	4
570	325	317	293	258	216	172	130	94	64	42	26	15	8	4
575	319	311	288	254	214	171	130	94	64	42	26	15	9	5
580	312	305	283	250	211	169	129	93	64	42	27	16	9	5
590	301	294	273	242	205	165	127	93	65	43	27	16	9	5
600	290	283	264	235	199	161	125	92	65	44	28	17	10	6
610	279	273	255	227	194	158	123	91	65	44	29	18	10	6
620	269	263	246	220	188	154	121	90	65	44	29	18	11	6
630	259	253	237	213	183	151	119	90	65	45	30	19	11	7
640	249	244	229	206	178	147	117	89	65	45	30	19	12	7
650	240	236	221	200	173	144	115	88	64	45	31	20	12	7
660	232	227	214	193	168	140	112	87	64	45	31	20	13	8
670	224	219	207	187	163	137	110	85	64	46	31	21	13	8
680	216	212	200	181	159	134	108	84	63	46	32	21	14	8
690	208	204	193	176	154	130	106	83	63	46	32	22	14	9
700	201	197	187	170	150	127	104	82	62	46	32	22	14	9
710	194	190	180	165	146	124	102	81	62	46	33	22	15	10
720	187	184	174	160	141	121	100	80	61	46	33	23	15	10
730	180	177	169	155	137	118	99	78	61	45	33	23	16	10
740	174	171	163	150	133	115	96	77	60	45	33	23	16	10
760	162	160	152	141	126	109	92	75	59	45	33	24	16	11
780	152	149	143	132	119	104	88	72	57	44	33	24	17	12
900	142	140	134	124	112	98	84	69	56	43	33	24	17	12
820	132	130	125	117	106	93	80	67	54	43	33	24	18	12
840	124	122	117	110	100	89	76	64	53	42	32	24	18	13
860	116	114	110	103	94	84	73	62	51	41	32	24	18	13
980	108	107	103	97	89	80	69	59	49	40	32	24	18	13
900	101	100	97	91	84	75	66	57	48	39	31	24	18	14
920	95	94	91	86	79	72	63	54	46	38	30	24	18	14
940	89	88	85	81	75	68	60	52	44	37	30	24	18	14
960	84	83	90	76	71	64	57	50	43	36	29	23	18	14
980	78	78	75	72	67	61	54	48	41	34	28	23	18	14
1000	74	73	71	67	63	59	52	46	39	33	28	22	18	14
1050	63	63	61	58	55	50	46	41	35	30	26	21	17	14
1100	54	54	52	50	47	44	40	36	32	28	24	20	16	13
1150	47	46	45	43	41	39	35	32	29	25	22	19	16	13
1200	40	40	39	38	36	34	31	28	26	23	20	17	15	12
1300	30	30	29	28	27	26	24	22	20	18	16	14	13	11
1400	23	22	22	22	21	20	19	17	16	15	13	12	11	9
1500	17	17	17	16	16	15	14	14	13	12	11	10	9	8
1600	13	13	13	13	12	12	11	11	10	9	9	8	7	7
1700	10	10	10	10	9	9	9	8	8	7	7	6	6	5
1800	8	8	8	7	7	7	7	7	6	6	6	5	5	4
1900	6	6	6	6	6	6	5	5	5	5	4	4	4	4
2000	5	5	5	5	4	4	4	4	4	4	4	3	3	3
2100	4	4	4	4	3	3	3	3	3	3	3	3	3	2
2200	3	3	3	3	3	3	3	3	2	2	2	2	2	2
2300	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table A.21. (continued)

Distance between GZ and county centroid (miles)	Distance crosswind (miles)													
	70	75	80	85	90	95	100	105	110	115	120	125	130	135
455	1	0	0	0	0	0	0	0	0	0	0	0	0	0
460	1	0	0	0	0	0	0	0	0	0	0	0	0	0
465	1	0	0	0	0	0	0	0	0	0	0	0	0	0
470	1	0	0	0	0	0	0	0	0	0	0	0	0	0
475	1	0	0	0	0	0	0	0	0	0	0	0	0	0
480	1	0	0	0	0	0	0	0	0	0	0	0	0	0
485	1	0	0	0	0	0	0	0	0	0	0	0	0	0
490	1	0	0	0	0	0	0	0	0	0	0	0	0	0
495	1	0	0	0	0	0	0	0	0	0	0	0	0	0
500	1	0	0	0	0	0	0	0	0	0	0	0	0	0
505	1	0	0	0	0	0	0	0	0	0	0	0	0	0
510	1	0	0	0	0	0	0	0	0	0	0	0	0	0
515	1	1	0	0	0	0	0	0	0	0	0	0	0	0
520	1	1	0	0	0	0	0	0	0	0	0	0	0	0
525	1	1	0	0	0	0	0	0	0	0	0	0	0	0
530	1	1	0	0	0	0	0	0	0	0	0	0	0	0
535	2	1	0	0	0	0	0	0	0	0	0	0	0	0
540	2	1	0	0	0	0	0	0	0	0	0	0	0	0
545	2	1	0	0	0	0	0	0	0	0	0	0	0	0
550	2	1	0	0	0	0	0	0	0	0	0	0	0	0
555	2	1	0	0	0	0	0	0	0	0	0	0	0	0
560	2	1	0	0	0	0	0	0	0	0	0	0	0	0
565	2	1	0	0	0	0	0	0	0	0	0	0	0	0
570	2	1	0	0	0	0	0	0	0	0	0	0	0	0
575	2	1	1	0	0	0	0	0	0	0	0	0	0	0
580	2	1	1	0	0	0	0	0	0	0	0	0	0	0
590	3	1	1	0	0	0	0	0	0	0	0	0	0	0
600	3	1	1	0	0	0	0	0	0	0	0	0	0	0
610	3	2	1	0	0	0	0	0	0	0	0	0	0	0
620	3	2	1	0	0	0	0	0	0	0	0	0	0	0
630	4	2	1	0	0	0	0	0	0	0	0	0	0	0
640	4	2	1	1	0	0	0	0	0	0	0	0	0	0
650	4	2	1	1	0	0	0	0	0	0	0	0	0	0
660	5	3	1	1	0	0	0	0	0	0	0	0	0	0
670	5	3	1	1	0	0	0	0	0	0	0	0	0	0
680	5	3	2	1	0	0	0	0	0	0	0	0	0	0
690	5	3	2	1	0	0	0	0	0	0	0	0	0	0
700	6	3	2	1	1	0	0	0	0	0	0	0	0	0
710	6	4	2	1	1	0	0	0	0	0	0	0	0	0
720	6	4	2	1	1	0	0	0	0	0	0	0	0	0
730	6	4	2	1	1	0	0	0	0	0	0	0	0	0
740	7	4	2	1	1	0	0	0	0	0	0	0	0	0
760	7	5	3	2	1	1	0	0	0	0	0	0	0	0
780	8	5	3	2	1	1	0	0	0	0	0	0	0	0
800	8	5	3	2	1	1	0	0	0	0	0	0	0	0
820	9	6	4	2	1	1	0	0	0	0	0	0	0	0
840	9	6	4	3	2	1	1	0	0	0	0	0	0	0
860	9	6	4	3	2	1	1	0	0	0	0	0	0	0
880	10	7	5	3	2	1	1	0	0	0	0	0	0	0
900	10	7	5	3	2	1	1	1	0	0	0	0	0	0
920	10	7	5	4	2	2	1	1	0	0	0	0	0	0
940	10	8	5	4	3	2	1	1	0	0	0	0	0	0
960	11	8	6	4	3	2	1	1	1	0	0	0	0	0
980	11	8	6	4	3	2	1	1	1	0	0	0	0	0
1000	11	8	6	4	3	2	1	1	1	0	0	0	0	0
1050	11	8	6	5	3	2	2	1	1	1	0	0	0	0
1100	11	8	7	5	4	3	2	1	1	1	0	0	0	0
1150	10	8	7	5	4	3	2	2	1	1	1	0	0	0
1200	10	8	7	5	4	3	2	2	1	1	1	0	0	0
1300	9	8	6	5	4	3	3	2	2	1	1	1	1	0
1400	8	7	6	5	4	3	3	2	2	1	1	1	1	0
1500	7	6	5	5	4	3	3	2	2	1	1	1	1	1
1600	6	5	5	4	3	3	3	2	2	2	1	1	1	1
1700	5	4	4	4	3	3	2	2	2	1	1	1	1	1
1800	4	4	3	3	3	2	2	2	2	1	1	1	1	1
1900	3	3	3	3	2	2	2	2	1	1	1	1	1	1
2000	3	3	2	2	2	2	2	1	1	1	1	1	1	1
2100	2	2	2	2	2	2	1	1	1	1	1	1	1	1
2200	2	2	2	1	1	1	1	1	1	1	1	1	1	1
2300	1	1	1	1	1	1	1	1	1	1	1	1	1	1

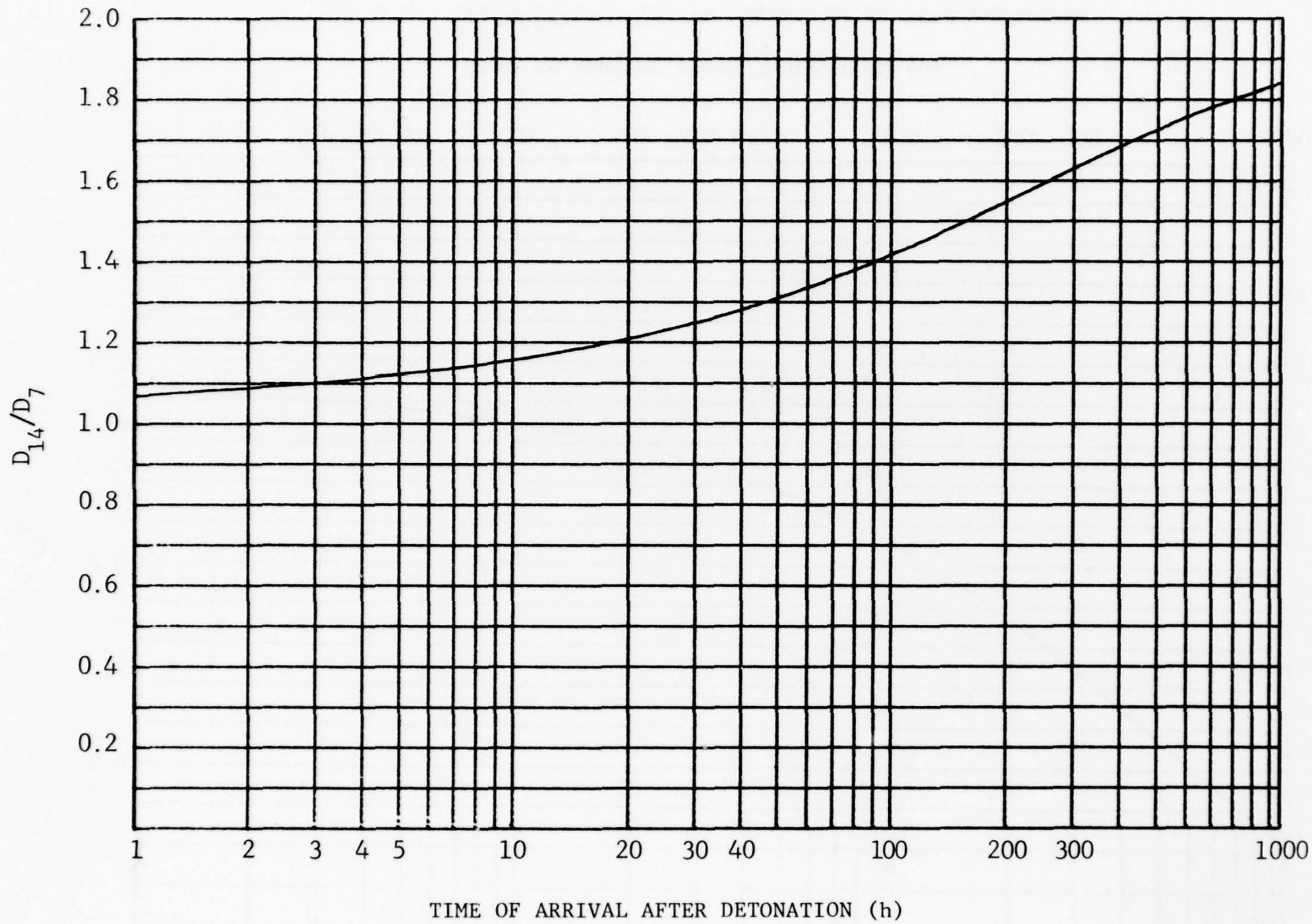

Fig. A.1. Graph to convert 7-d exposures to 14-d exposures.

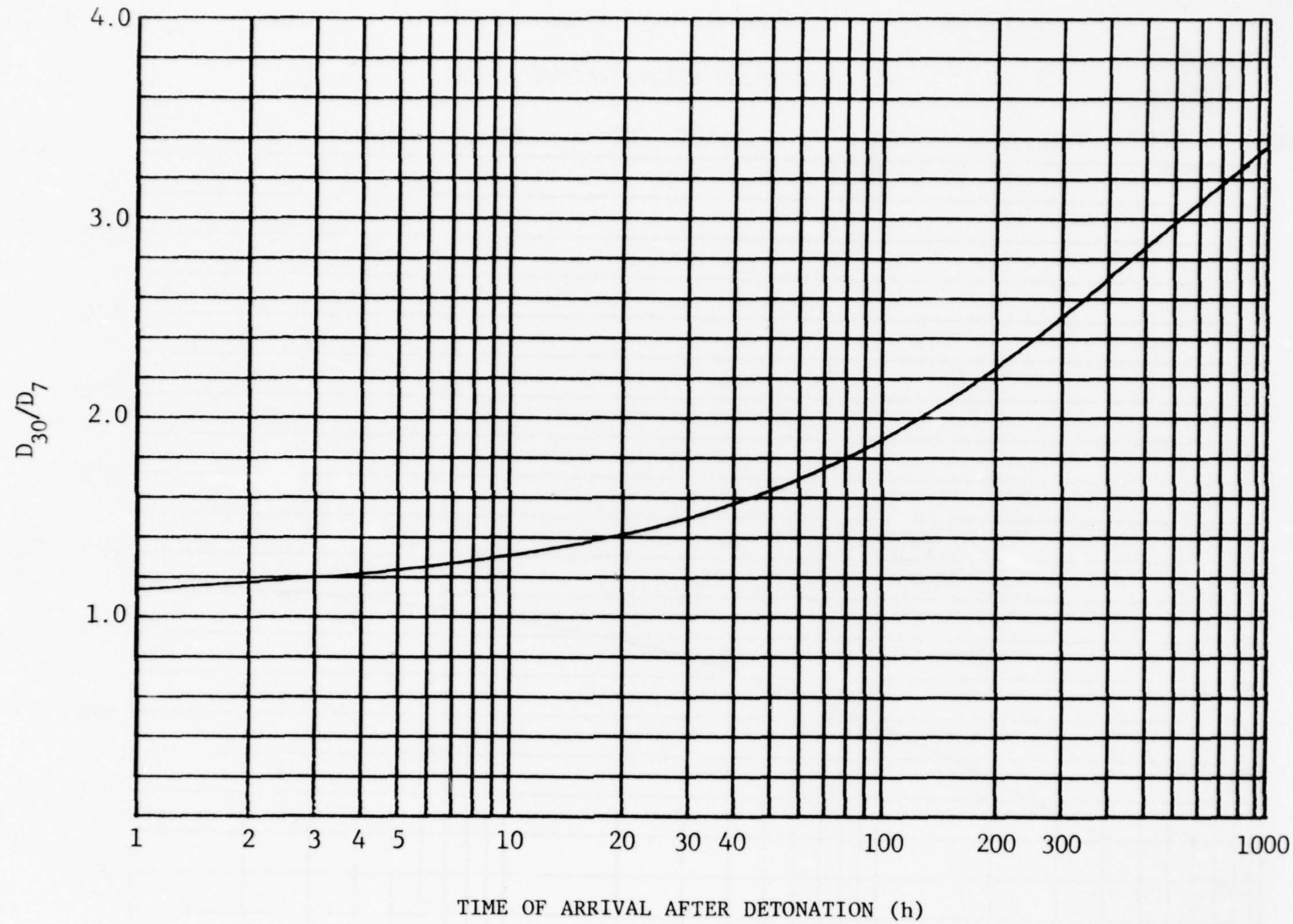

Fig. A.2. Graph to convert 7-d exposures to 30-d exposures.

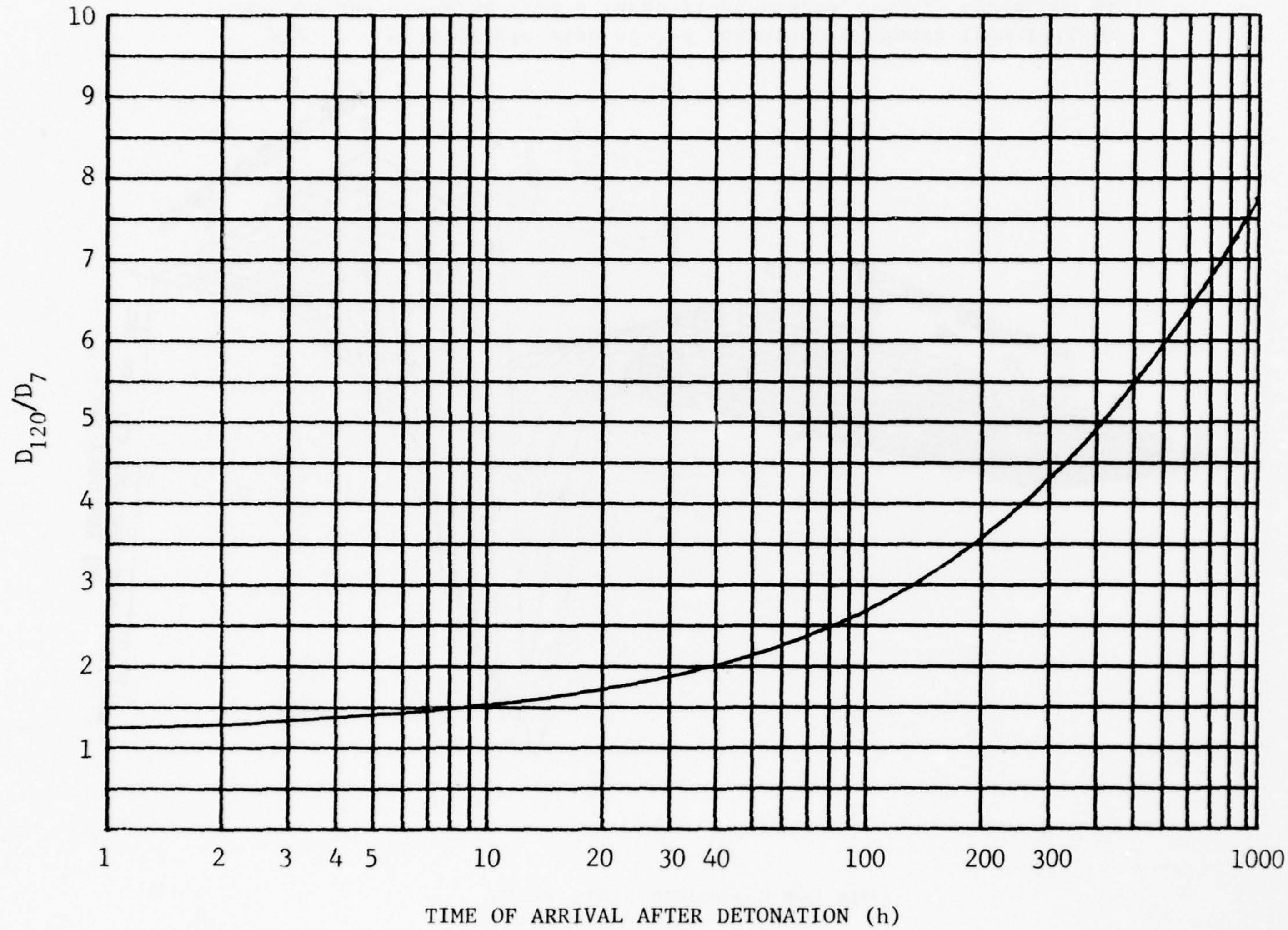

Fig. A.3. Graph to convert 7-d exposures to 120-d exposures.

ORNL-DWG 78-4132

Large Yield Weapon--5 mph Wind

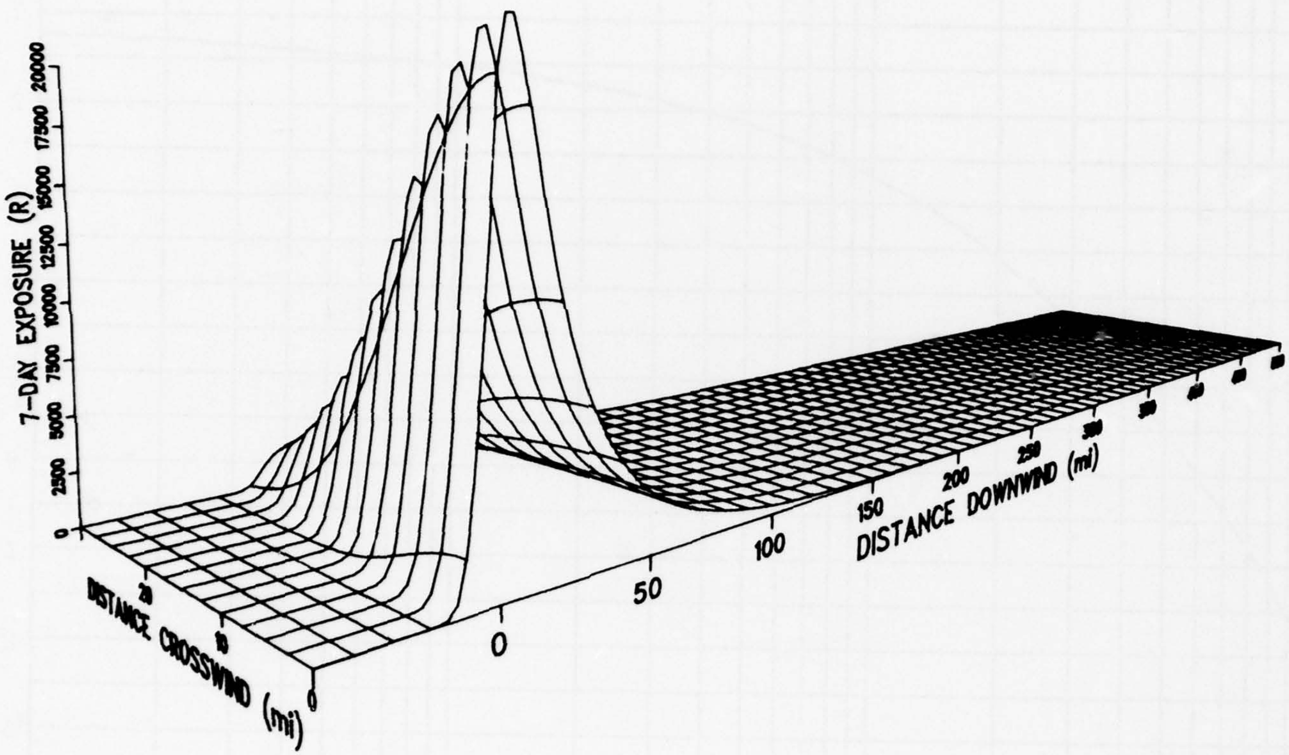

Fig. A.4. Isometric view of 7-d radiation exposure from fallout crosswind and downwind from a large-yield-weapon (20 MT) surfaceburst with a 5-mph effective wind.

ORNL-DWG 78-4133

Large Yield Weapon--10 mph Wind

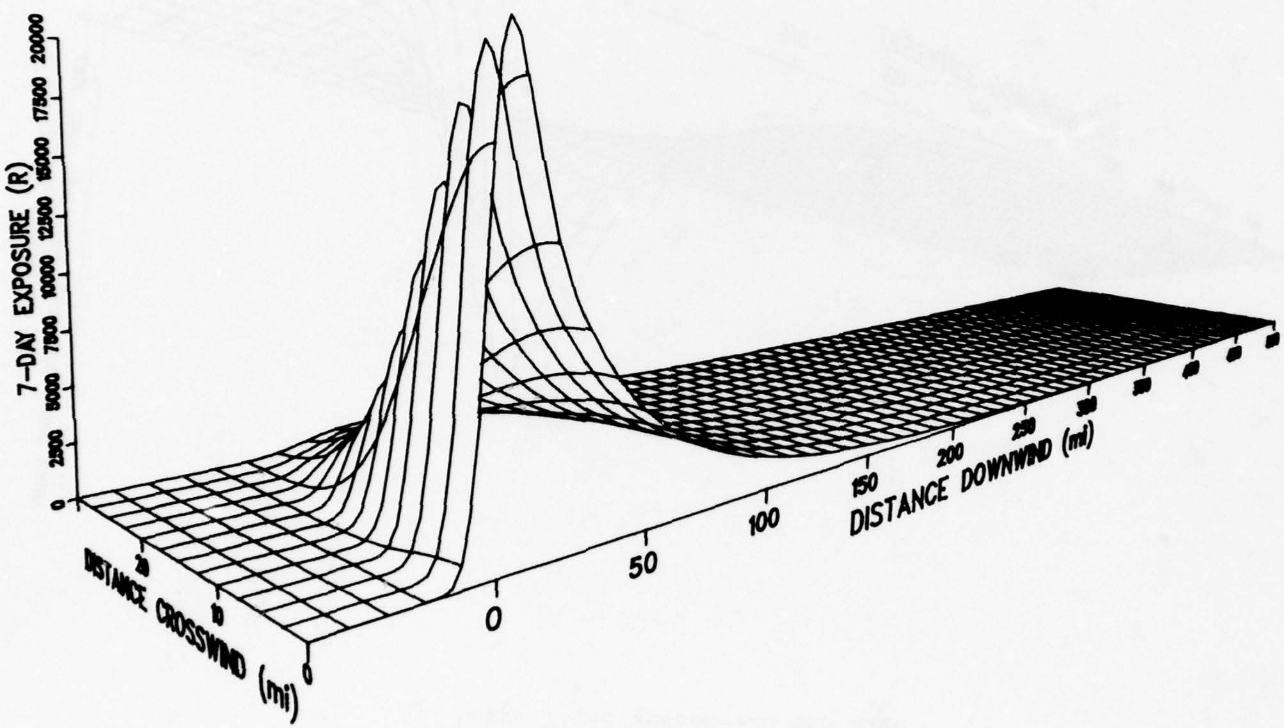

Fig. A.5. Isometric view of 7-d radiation exposure from fallout crosswind and downwind from a large-yield-weapon (20 MT) surfaceburst with a 10-mph effective wind.

ORNL-DWG 78-4134

Large Yield Weapon--20 mph Wind

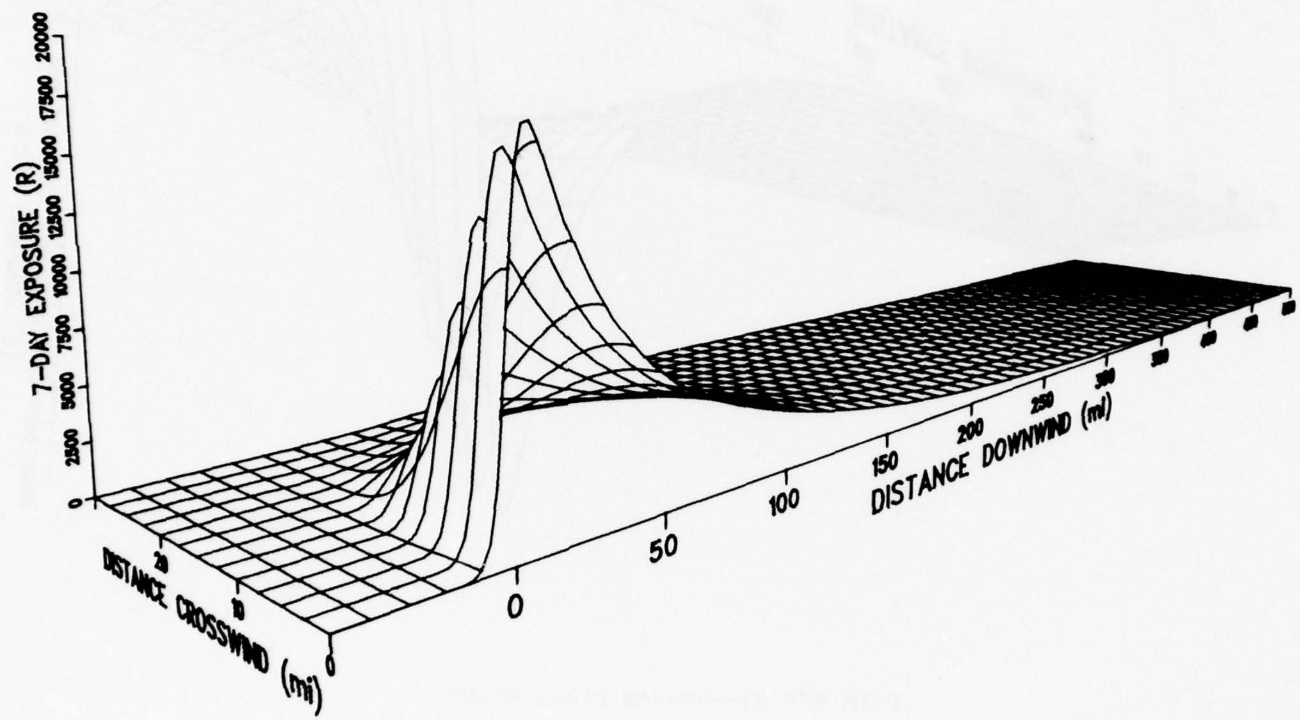

Fig. A.6. Isometric view of 7-d radiation exposure from fallout crosswind and downwind from a large-yield-weapon (20 MT) surfaceburst with a 20-mph effective wind.

ORNL-DWG 78-4135

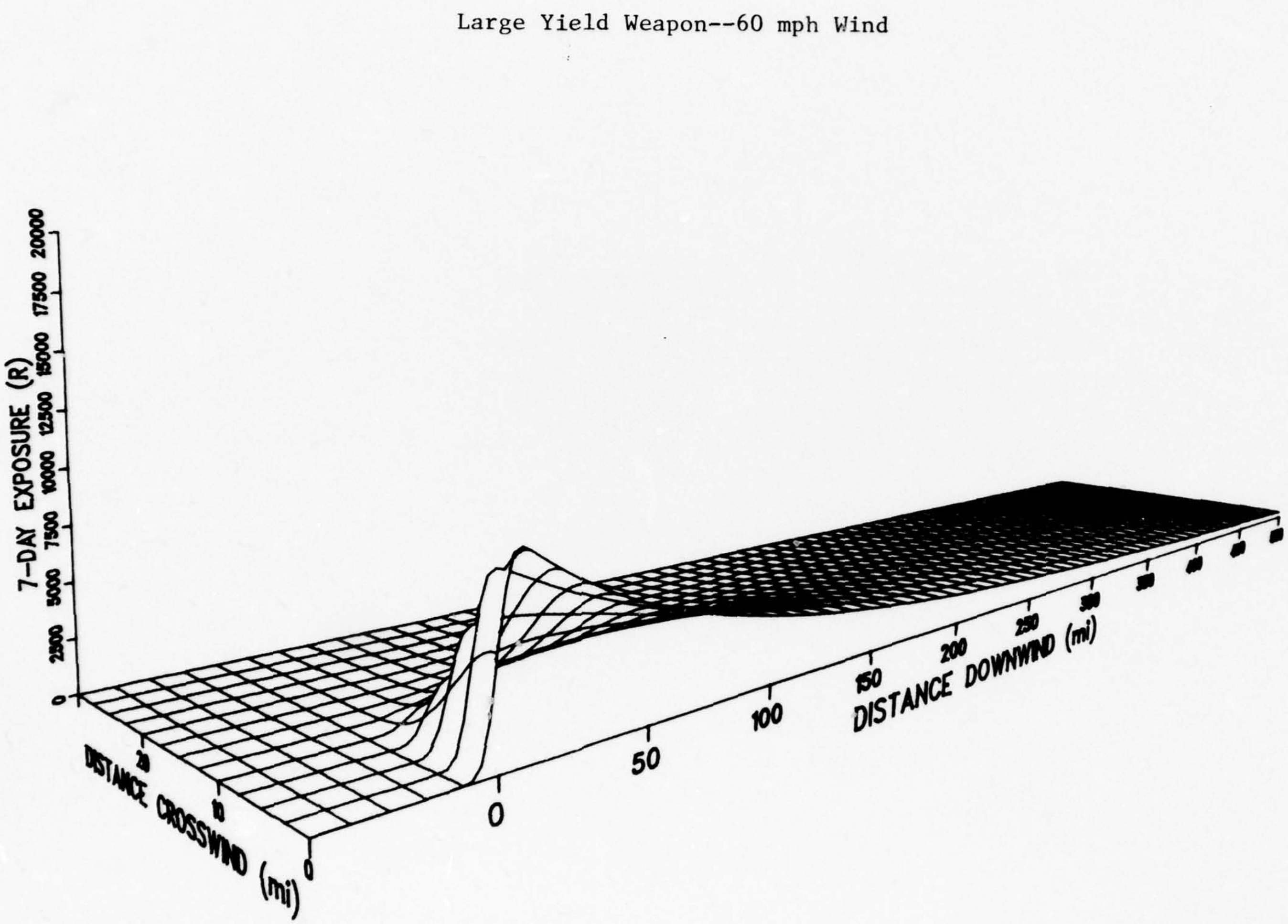

Fig. A.7. Isometric view of 7-d radiation exposure from fallout crosswind and downwind from a large-yield-weapon (20 MT) surfaceburst with a 60-mph effective wind.

Appendix B

COUNTY PROTECTION FACTOR PROFILES

Appendix B

COUNTY PROTECTION FACTOR PROFILES

Table B.1 lists protection factor profiles (PFP) for counties in the United States. The counties are listed alphabetically within each state, and states are listed alphabetically within their DCPA region.

The profile lists the county name and the percentage of the population in five protection categories corresponding to PF 5, 15, 28, 70, and 400. The 1970 population of the county is listed in parentheses between the PF 70 and PF 400 columns. The decimal points under the PF categories are positioned for use with the fallout casualty (FC) template as described in Chap. 2. If the table must be reproduced and used with the template, precautions must be taken to insure that the distances between decimal points are not changed by the reproduction process.

The process of generating this table is described in detail in Appendices D and E of Instrumentation Requirements for Radiological Defense of the U.S. Population in Community Shelters, ORNL-5371, by C. M. Haaland and K. S. Gant, Oak Ridge National Laboratory, August 1978.

*See footnote, p. 30.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 1

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
CONNECTICUT						
FAIRFIELD	0.	0.	79.	8.	(772792)	13.
HARTFORD	0.	0.	62.	22.	(804980)	16.
LITCHFIELD	0.	0.	46.	31.	(139770)	23.
MIDDLESEX	0.	0.	81.	3.	(112187)	16.
NEW HAVEN	0.	0.	76.	9.	(750285)	15.
NEW LONDON	0.	0.	62.	18.	(229262)	20.
TOLLAND	0.	1.	69.	12.	(107273)	18.
WINDHAM	0.	0.	56.	25.	(89120)	19.
MAINE						
ANDROSCOGGIN	0.	0.	64.	23.	(96062)	13.
AROOSTOOK	0.	5.	58.	23.	(91588)	14.
CUMBERLAND	0.	10.	55.	32.	(195005)	3.
FRANKLIN	0.	0.	55.	22.	(20406)	23.
HANCOCK	0.	0.	49.	28.	(34113)	23.
KENNEBEC	0.	2.	63.	8.	(93963)	27.
KNOX	0.	0.	68.	25.	(28179)	7.
LINCOLN	0.	12.	77.	8.	(20584)	3.
OXFORD	0.	12.	61.	15.	(43459)	12.
PENOBSCOT	0.	0.	55.	18.	(128723)	27.
PISCATAQUIS	0.	0.	63.	12.	(15548)	25.
SAGADAHOC	0.	0.	54.	33.	(22068)	13.
SOMERSET	0.	0.	59.	20.	(40043)	21.
WALDO	0.	0.	72.	22.	(21655)	6.
WASHINGTON	0.	8.	66.	10.	(30724)	16.
YORK	0.	1.	66.	16.	(109928)	17.
MASSACHUSETTS						
BARNSTABLE	0.	0.	64.	21.	(97883)	15.
BERKSHIRE	0.	3.	54.	11.	(146401)	32.
BRISTOL	0.	0.	75.	12.	(440556)	13.
DUKES	0.	0.	83.	13.	(6117)	4.
ESSEX	0.	0.	74.	11.	(635015)	15.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 1

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
	MASSACHUSETTS					
FRANKLIN	0.	22.	6.	68.	(57272)	4.
HAMPDEN	0.	1.	60.	36.	(462902)	3.
HAMPSHIRE	0.	10.	34.	31.	(115284)	25.
MIDDLESEX	0.	0.	69.	12.	(1388611)	19.
NANTUCKET	0.	0.	89.	7.	(3774)	4.
NORFOLK	0.	0.	69.	13.	(601712)	18.
PLYMOUTH	0.	2.	75.	10.	(321156)	13.
SUFFOLK	0.	0.	63.	12.	(737188)	25.
WORCESTER	0.	0.	71.	15.	(615289)	14.
	NEW HAMPSHIRE					
BELKNAP	0.	10.	56.	28.	(30801)	6.
CARROLL	0.	25.	58.	12.	(17589)	5.
CHESHIRE	0.	5.	52.	27.	(52528)	16.
COOS	0.	4.	30.	41.	(34332)	25.
GRAFTON	0.	10.	37.	23.	(57045)	30.
HILLSBOROUGH	0.	1.	68.	13.	(227246)	18.
MERRIMACK	0.	5.	46.	23.	(81693)	26.
ROCKINGHAM	0.	7.	74.	10.	(136364)	9.
STRAFFORD	0.	9.	54.	19.	(69967)	18.
SULLIVAN	0.	13.	63.	14.	(30116)	10.
	NEW JERSEY					
ATLANTIC	0.	0.	68.	20.	(175086)	12.
BERGEN	0.	0.	86.	5.	(880045)	9.
BURLINGTON	0.	1.	79.	19.	(334357)	1.
CAMDEN	0.	0.	87.	7.	(446644)	6.
CAPE MAY	0.	18.	13.	64.	(60552)	5.
CUMBERLAND	0.	2.	56.	21.	(118298)	21.
ESSEX	0.	0.	59.	13.	(928810)	28.
GLOUCESTER	0.	0.	95.	2.	(162747)	3.
HUDSON	0.	0.	59.	17.	(599168)	24.
HUNTERDON	0.	10.	43.	37.	(69095)	10.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 1

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NEW JERSEY						
MERCER	0.	0.	55.	44.	(292601)	1.
MIDDLESEX	0.	0.	82.	6.	(583943)	12.
MONMOUTH	0.	0.	77.	11.	(458150)	12.
MORRIS	0.	0.	80.	5.	(387360)	15.
OCEAN	0.	9.	66.	25.	(205796)	0.
PASSAIC	0.	0.	73.	12.	(460281)	15.
SALEM	0.	9.	73.	18.	(63239)	0.
SOMERSET	0.	0.	75.	9.	(195735)	16.
SUSSEX	0.	0.	82.	13.	(71668)	5.
UNION	0.	0.	63.	11.	(551375)	26.
WARREN	0.	4.	58.	13.	(70650)	25.
NEW YORK						
ALBANY	0.	0.	69.	8.	(289795)	23.
ALLEGANY	0.	0.	54.	21.	(46681)	25.
BRONX	0.	0.	68.	6.	(1419099)	26.
BROOME	0.	11.	46.	41.	(229071)	2.
CATTARAUGUS	0.	0.	43.	30.	(81513)	27.
CAYUGA	0.	0.	48.	29.	(77558)	23.
CHAUTAUQUA	0.	0.	58.	16.	(152074)	26.
CHEMUNG	0.	0.	67.	12.	(104326)	21.
CHENANGO	0.	0.	48.	29.	(45327)	23.
CLINTCN	0.	10.	28.	55.	(73854)	7.
COLUMBIA	0.	0.	78.	9.	(52592)	13.
CORTLAND	0.	0.	42.	31.	(50670)	27.
DELAWARE	0.	3.	63.	22.	(41826)	12.
DUTCHESS	0.	0.	46.	28.	(224739)	26.
ERIE	0.	0.	70.	8.	(1093116)	22.
ESSEX	0.	22.	20.	39.	(31920)	19.
FRANKLIN	0.	0.	58.	15.	(44844)	27.
FULTON	0.	0.	49.	30.	(53875)	21.
GENESEE	0.	0.	39.	35.	(55253)	26.
GREENE	0.	0.	66.	17.	(31409)	17.
HAMILTCN	0.	0.	75.	17.	(4356)	8.
HERKIMER	0.	12.	29.	57.	(60483)	2.
JEFFERSON	0.	0.	59.	15.	(88508)	26.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 1

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NEW YORK						
KINGS	0.	0.	53.	16.	(2587997)	31.
LEWIS	0.	0.	0.	0.	(69)	100.
LIVINGSTON	0.	0.	43.	24.	(54717)	33.
MADISON	0.	0.	50.	20.	(62099)	30.
MONROE	0.	0.	70.	10.	(683972)	20.
MONTGOMERY	0.	0.	46.	32.	(58675)	22.
NASSAU	0.	0.	71.	10.	(1360991)	19.
NEW YORK	0.	0.	35.	5.	(1369074)	60.
NIAGARA	0.	0.	67.	13.	(228337)	20.
ONEIDA	0.	5.	53.	40.	(270866)	2.
ONONDAGA	0.	0.	72.	11.	(461788)	17.
ONTARIC	0.	0.	64.	18.	(104939)	18.
ORANGE	0.	15.	43.	25.	(246687)	17.
ORLEANS	0.	0.	49.	29.	(37305)	22.
OSWEGO	0.	0.	52.	23.	(100897)	25.
OTSEGO	0.	0.	40.	16.	(55173)	44.
PUTNAM	0.	0.	83.	5.	(53143)	12.
QUEENS	0.	0.	73.	6.	(2033948)	21.
RENSSELAER	0.	0.	85.	3.	(205169)	12.
RICHMOND	0.	0.	79.	5.	(304222)	16.
ROCKLAND	0.	2.	76.	10.	(228855)	12.
SARATOGA	0.	4.	61.	21.	(116234)	14.
SCHENECTADY	0.	0.	72.	11.	(165841)	17.
SCHOHARIE	0.	0.	51.	18.	(22776)	31.
SCHUYLER	0.	0.	49.	13.	(17049)	38.
SENECA	0.	0.	0.	0.	(1765)	100.
ST LAWRENCE	0.	0.	46.	16.	(113703)	38.
STEUBEN	0.	0.	55.	24.	(97237)	21.
SUFFOLK	0.	3.	69.	13.	(1047789)	15.
SULLIVAN	0.	0.	50.	20.	(50961)	30.
TIOGA	0.	0.	76.	15.	(37051)	9.
TOMPKINS	0.	0.	57.	9.	(72527)	34.
ULSTER	0.	0.	75.	8.	(139651)	17.
WARREN	0.	8.	46.	21.	(4613)	25.
WASHINGTON	0.	0.	76.	14.	(52032)	10.
WAYNE	0.	0.	53.	23.	(80693)	24.
WESTCHESTER	0.	0.	66.	12.	(945307)	22.
WYOMING	0.	0.	46.	17.	(37683)	37.
YATES	0.	0.	54.	35.	(28646)	11.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 1

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
RHODE ISLAND						
BRISTOL	0.	0.	67.	32.	(46726)	1.
KENT	0.	0.	76.	24.	(143716)	0.
NEWPORT	0.	0.	75.	20.	(95606)	5.
PROVIDENCE	0.	0.	59.	40.	(578228)	1.
WASHINGTON	0.	4.	45.	41.	(80436)	10.
VERMONT						
ADDISON	0.	8.	60.	15.	(23357)	17.
BENNINGTON	0.	0.	64.	21.	(28596)	15.
CALEDONIA	0.	3.	78.	12.	(24840)	7.
CHITTENDEN	0.	0.	80.	7.	(99681)	13.
ESSEX	0.	0.	86.	7.	(4866)	7.
FRANKLIN	0.	3.	74.	17.	(31964)	6.
GRAND ISLE	0.	0.	96.	0.	(2065)	4.
LAMOILLE	0.	1.	61.	11.	(12900)	27.
ORANGE	0.	0.	90.	5.	(19152)	5.
ORLEANS	0.	2.	74.	18.	(19991)	6.
RUTLAND	0.	1.	39.	30.	(53235)	30.
WASHINGTON	0.	8.	44.	18.	(47791)	30.
WINDHAM	0.	1.	30.	28.	(33178)	41.
WINDSOR	0.	2.	56.	21.	(42714)	21.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
DELAWARE						
KENT	0.	2.	59.	32.	(79016)	7.
NEW CASTLE	0.	2.	70.	25.	(380758)	3.
SUSSEX	0.	6.	66.	16.	(83232)	12.
DISTRICT OF COLUMBIA						
WASHINGTON	0.	0.	14.	23.	(750693)	63.
MARYLAND						
ALLEGANY	0.	1.	50.	12.	(89549)	37.
ANNE ARUNDEL	0.	2.	76.	8.	(311278)	14.
BALTIMCRE	0.	0.	82.	6.	(621132)	12.
BALTIMCRE CITY	0.	0.	75.	7.	(875242)	18.
CALVERT	0.	4.	92.	4.	(16224)	0.
CAROLINE	0.	0.	87.	12.	(20648)	1.
CARROLL	0.	7.	40.	23.	(69910)	30.
CECIL	0.	7.	61.	19.	(52253)	13.
CHARLES	0.	1.	70.	14.	(44365)	15.
DORCHESTER	7.	5.	60.	12.	(27956)	16.
FREDERICK	0.	12.	53.	13.	(82481)	22.
GARRETT	0.	36.	35.	12.	(19536)	17.
HARFORD	0.	2.	79.	8.	(114209)	11.
HOWARD	0.	1.	53.	23.	(46889)	23.
KENT	0.	1.	60.	32.	(19395)	7.
MONTGOMERY	0.	1.	71.	11.	(513756)	17.
PRINCE GEORGES	0.	1.	83.	15.	(640180)	1.
QUEEN ANNES	0.	0.	78.	8.	(16492)	14.
SOMERSET	6.	0.	73.	16.	(18258)	5.
ST MARYS	0.	4.	87.	5.	(49635)	4.
TALBOT	0.	1.	48.	37.	(23531)	14.
WASHINGTON	0.	1.	71.	15.	(105371)	13.
WICCMICO	0.	0.	46.	22.	(55091)	32.
WORCESTER	0.	3.	86.	5.	(25108)	6.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
PENNSYLVANIA						
ADAMS	0.	15.	50.	34.	(64559)	1.
ALLEGHENY	0.	0.	79.	7.	(1594034)	14.
ARMSTRONG	0.	0.	66.	9.	(77387)	25.
BEAVER	0.	0.	70.	12.	(206640)	18.
BEDFORD	0.	0.	85.	7.	(44899)	8.
BERKS	0.	0.	50.	28.	(284175)	22.
BLAIR	0.	8.	57.	34.	(133343)	1.
BRADFORD	0.	0.	88.	9.	(59132)	3.
BUCKS	3.	0.	86.	5.	(390256)	6.
BUTLER	0.	1.	54.	15.	(121210)	30.
CAMBRIA	0.	0.	58.	21.	(175557)	21.
CAMERON	0.	0.	78.	15.	(7388)	7.
CARBON	0.	0.	43.	36.	(47844)	21.
CENTRE	0.	0.	38.	5.	(98868)	57.
CHESTER	0.	0.	61.	19.	(263974)	20.
CLARION	0.	2.	70.	5.	(39428)	23.
CLEARFIELD	0.	0.	57.	19.	(75946)	24.
CLINTON	0.	0.	37.	28.	(37878)	35.
COLUMBIA	0.	0.	67.	24.	(54729)	9.
CRAWFORD	0.	0.	76.	10.	(80603)	14.
CUMBERLAND	0.	0.	78.	12.	(154665)	10.
DAUPHIN	0.	0.	46.	24.	(218734)	30.
DELAWARE	0.	1.	71.	17.	(617534)	11.
ELK	0.	2.	81.	8.	(36322)	9.
ERIE	0.	5.	57.	37.	(262504)	1.
FAYETTE	0.	0.	73.	19.	(146689)	8.
FOREST	0.	0.	94.	6.	(5007)	0.
FRANKLIN	0.	0.	54.	19.	(97472)	27.
FULTON	0.	3.	51.	10.	(10016)	36.
GREENE	0.	0.	89.	6.	(34018)	5.
HUNTINGDON	0.	0.	57.	17.	(37899)	26.
INDIANA	0.	0.	68.	17.	(83965)	15.
JEFFERSON	0.	4.	54.	21.	(43423)	21.
JUNIATA	0.	0.	95.	5.	(17480)	0.
LACKAWANNA	0.	0.	63.	15.	(234635)	22.
LANCASTER	0.	0.	49.	34.	(305880)	17.
LAWRENCE	0.	2.	50.	13.	(102795)	35.
LEBANON	0.	0.	60.	12.	(101113)	28.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
PENNSYLVANIA						
LEHIGH	0.	0.	69.	16.	(269496)	15.
LUZERNE	0.	1.	55.	41.	(333485)	3.
LYCOMING	0.	0.	79.	10.	(113104)	11.
MCKEAN	0.	0.	70.	15.	(51460)	15.
MERCER	0.	0.	67.	15.	(128859)	18.
MIFFLIN	0.	0.	74.	19.	(45867)	7.
MONROE	0.	0.	35.	40.	(44993)	25.
MONTGOMERY	0.	1.	62.	14.	(601440)	23.
MONTOUR	0.	0.	34.	34.	(15524)	32.
NORTHAMPTON	0.	0.	67.	15.	(201433)	18.
NORTHUMBERLAND	0.	0.	63.	22.	(101639)	15.
PERRY	0.	0.	83.	14.	(25440)	3.
PHILADELPHIA	0.	0.	66.	11.	(1913706)	23.
PIKE	0.	14.	77.	5.	(9974)	4.
POTTER	0.	0.	59.	28.	(16200)	13.
SCHUYLKILL	0.	0.	71.	8.	(161351)	21.
SNYDER	0.	0.	80.	9.	(26354)	11.
SOMERSET	0.	0.	76.	8.	(72954)	16.
SULLIVAN	0.	7.	87.	4.	(5263)	2.
SUSQUEHANNA	0.	0.	92.	4.	(35446)	4.
TIOGA	0.	4.	63.	29.	(38674)	4.
UNION	0.	0.	32.	29.	(27424)	39.
VENANGO	0.	0.	0.	0.	(0)	0.
WARREN	0.	2.	33.	26.	(35594)	39.
WASHINGTON	0.	0.	89.	4.	(211880)	7.
WAYNE	0.	0.	51.	35.	(29950)	14.
WESTMORELAND	0.	0.	85.	7.	(376808)	8.
WYOMING	0.	0.	72.	20.	(18160)	8.
YORK	0.	2.	51.	41.	(257615)	6.
VIRGINIA						
ACCOMACK	0.	0.	95.	4.	(28593)	1.
ALBEMARLE	0.	0.	80.	15.	(27890)	5.
ALEXANDRIA	0.	0.	37.	52.	(119046)	11.
ALLEGHANY	0.	0.	73.	3.	(7754)	24.
AMELIA	0.	21.	75.	4.	(7592)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
VIRGINIA						
AMHERST	0.	0.	59.	31.	(19186)	10.
APPOMATTOX	0.	0.	89.	6.	(8319)	5.
ARLINGTON	0.	0.	49.	43.	(178762)	8.
AUGUSTA	0.	0.	72.	3.	(38768)	25.
BATH	0.	0.	22.	27.	(4658)	51.
BEDFORD	0.	0.	98.	2.	(7250)	0.
BLAND	0.	0.	87.	13.	(4726)	0.
BOTETOURT	0.	0.	74.	1.	(16636)	25.
BRISTOL	0.	0.	53.	31.	(18820)	16.
BRUNSWICK	0.	9.	58.	28.	(16288)	5.
BUCHANAN	0.	13.	66.	20.	(32071)	1.
BUCKINGHAM	0.	7.	89.	4.	(12392)	0.
BUENA VISTA	0.	0.	92.	0.	(8356)	8.
CAMPBELL	0.	0.	96.	4.	(40496)	0.
CAROLINE	0.	0.	98.	1.	(14779)	1.
CARROLL	0.	4.	84.	8.	(20553)	4.
CHARLES CITY	0.	0.	96.	3.	(6158)	1.
CHARLOTTE	0.	52.	46.	2.	(11587)	0.
CHARLOTTESVILLE	0.	0.	10.	30.	(48134)	60.
CHESAPEAKE	53.	0.	46.	1.	(68595)	0.
CHESTERFIELD	0.	0.	85.	5.	(92887)	10.
CLARKE	0.	4.	33.	49.	(8102)	14.
CLIFTON FORGE	0.	0.	48.	34.	(8788)	18.
COLONIAL HEIGHTS	0.	0.	95.	5.	(13159)	0.
COVINGTON	0.	0.	0.	49.	(13208)	51.
CRAIG	0.	0.	99.	0.	(3160)	1.
CULPEPER	0.	9.	50.	24.	(16959)	17.
CUMBERLAND	0.	20.	74.	6.	(4738)	0.
DANVILLE	0.	18.	51.	13.	(60783)	18.
DICKENSON	0.	2.	30.	4.	(18884)	64.
DINWIDDIE	0.	0.	71.	1.	(11738)	28.
EMPORIA	0.	0.	0.	0.	(0)	0.
ESSEX	0.	0.	88.	12.	(8112)	0.
FAIRFAX	0.	5.	68.	23.	(467625)	4.
FALLS CHURCH	0.	0.	72.	28.	(15683)	0.
FAUQUIER	0.	17.	71.	9.	(27015)	3.
FLOYD	0.	0.	95.	5.	(7196)	0.
FLUVANNA	0.	0.	77.	20.	(7018)	3.
FRANKLIN	0.	21.	54.	23.	(26858)	2.

TABLE 8.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
VIRGINIA						
FREDERICK	0.	23.	50.	12.	(25499)	15.
FREDERICKSBURG	0.	0.	5.	62.	(25924)	33.
GALAX	0.	0.	76.	17.	(10130)	7.
GILES	0.	0.	38.	11.	(16903)	51.
GLOUCESTER	0.	0.	96.	1.	(14083)	3.
GOOCHLAND	0.	0.	60.	13.	(10621)	27.
GRAYSON	0.	0.	85.	15.	(14391)	0.
GREENE	0.	0.	99.	1.	(5248)	0.
GREENSVILLE	12.	0.	84.	4.	(13560)	0.
HALIFAX	0.	21.	71.	3.	(25775)	5.
HAMPTON	36.	0.	49.	2.	(117517)	13.
HANOVER	0.	0.	84.	12.	(29552)	4.
HARRISONBURG	0.	0.	0.	51.	(18056)	49.
HENRICO	1.	0.	70.	11.	(130061)	18.
HENRY	0.	18.	49.	22.	(52978)	11.
HIGHLAND	0.	0.	98.	0.	(2529)	2.
HOPEWELL	0.	0.	89.	6.	(23479)	5.
ISLE OF WIGHT	0.	0.	39.	47.	(17608)	14.
JAMES CITY	0.	14.	46.	37.	(14036)	3.
KING AND QUEEN	0.	0.	100.	0.	(6495)	0.
KING GEORGE	0.	0.	100.	0.	(9133)	0.
KING WILLIAM	0.	0.	88.	9.	(13722)	3.
LANCASTER	0.	0.	97.	2.	(8453)	1.
LEE	0.	13.	44.	7.	(19038)	36.
LEXINGTON	0.	0.	0.	0.	(0)	0.
LOUDOUN	0.	8.	54.	31.	(25627)	7.
LOUISA	0.	0.	96.	3.	(13564)	1.
LUNENBURG	0.	23.	63.	14.	(11687)	0.
LYNCHBURG	0.	0.	91.	1.	(67692)	8.
MADISON	0.	16.	79.	5.	(8638)	0.
MARTINSVILLE	0.	0.	0.	89.	(20230)	11.
MATHEWS	10.	0.	90.	0.	(7168)	0.
MECKLENBURG	0.	14.	73.	1.	(29310)	12.
MIDDLESEX	0.	6.	89.	3.	(6636)	2.
MONTGOMERY	0.	0.	71.	16.	(47032)	13.
NANSEMOND	13.	0.	58.	10.	(19575)	19.
NELSON	0.	0.	93.	7.	(12649)	0.
NEW KENT	0.	0.	96.	1.	(4830)	3.
NEWPORT NEWS	9.	0.	69.	6.	(132170)	16.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
VIRGINIA						
NORFOLK	32.	0.	55.	9.	(320758)	4.
NORTHAMPTON	0.	0.	57.	2.	(14853)	41.
NORTHUMBERLAND	0.	0.	100.	0.	(11316)	0.
NORTON	0.	0.	0.	49.	(1183)	51.
NOTTOWAY	0.	10.	55.	28.	(15184)	7.
ORANGE	0.	9.	82.	4.	(14854)	5.
PAGE	0.	9.	57.	1.	(16581)	33.
PATRICK	0.	22.	51.	27.	(16693)	0.
PETERSBURG	0.	0.	81.	9.	(57787)	10.
PITTSYLVANIA	0.	33.	47.	16.	(38696)	4.
PORTSMOUTH	33.	0.	57.	3.	(105803)	7.
POWHATAN	0.	0.	40.	39.	(7696)	21.
PRINCE EDWARD	0.	2.	21.	58.	(14585)	19.
PRINCE GEORGE	0.	0.	66.	11.	(24982)	23.
PRINCE WILLIAM	0.	6.	71.	22.	(102875)	1.
PRINCESS ANNE	63.	0.	37.	0.	(140407)	0.
PULASKI	0.	0.	83.	12.	(27595)	5.
RADFORD	0.	0.	52.	28.	(13488)	20.
RAPPAHANNOCK	0.	13.	87.	0.	(5277)	0.
RICHMOND	0.	0.	59.	15.	(250932)	26.
ROANOKE	0.	0.	72.	15.	(180992)	13.
ROCKBRIDGE	0.	0.	85.	11.	(21427)	4.
ROCKINGHAM	0.	0.	71.	13.	(39976)	16.
RUSSELL	0.	11.	39.	8.	(25108)	42.
SALEM	0.	0.	0.	0.	(0)	0.
SCOTT	0.	6.	33.	7.	(25659)	54.
SHENANDOAH	0.	31.	55.	7.	(25301)	7.
SMYTH	0.	0.	46.	29.	(25040)	25.
SOUTH BOSTON	0.	30.	38.	18.	(11190)	14.
SOUTH NORFOLK	42.	0.	58.	0.	(27266)	0.
SOUTHAMPTON	19.	0.	70.	11.	(26937)	0.
SPOTSYLVANIA	0.	0.	75.	12.	(12601)	13.
STAFFORD	0.	0.	89.	3.	(17230)	8.
STAUNTON	0.	0.	67.	24.	(27547)	9.
SUFFOLK	0.	0.	0.	45.	(23781)	55.
SURRY	4.	0.	96.	0.	(3539)	0.
SUSSEX	11.	0.	89.	0.	(13808)	0.
TAZEWELL	0.	12.	63.	5.	(40886)	20.
VIRGINIA BEACH	2.	0.	38.	6.	(13700)	54.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
	VIRGINIA					
WARREN	0.	16.	37.	32.	(14691)	15.
WASHINGTON	0.	0.	80.	16.	(44389)	4.
WAYNESBORO	0.	0.	85.	9.	(22308)	6.
WESTMORELAND	0.	0.	94.	6.	(10306)	0.
WILLIAMSBURG	0.	0.	0.	57.	(15340)	43.
WINCHESTER	0.	0.	0.	24.	(20323)	76.
WISE	0.	0.	14.	18.	(35010)	68.
WYTHE	0.	0.	84.	9.	(20868)	7.
YORK	47.	0.	44.	6.	(37614)	3.
	WEST VIRGINIA					
BARBOUR	0.	0.	64.	21.	(14635)	15.
BERKELEY	0.	2.	65.	3.	(36073)	30.
BOONE	0.	3.	82.	15.	(28606)	0.
BRAXTON	0.	16.	76.	6.	(12666)	2.
BROOKE	0.	0.	93.	3.	(29685)	4.
CABELL	0.	1.	83.	15.	(107625)	1.
CALHOUN	0.	0.	88.	1.	(7046)	11.
CLAY	0.	7.	91.	1.	(10131)	1.
DODDRIDGE	0.	0.	96.	0.	(5022)	4.
FAYETTE	0.	7.	58.	24.	(51546)	11.
GILMER	0.	2.	59.	28.	(7897)	11.
GRANT	0.	0.	88.	2.	(8607)	10.
GREENBRIER	0.	2.	73.	13.	(32476)	12.
HAMPSHIRE	0.	0.	79.	16.	(12842)	5.
HANCOCK	0.	0.	91.	6.	(39749)	3.
HARDY	0.	0.	78.	0.	(8855)	22.
HARRISON	0.	0.	79.	8.	(74803)	13.
JACKSON	0.	7.	76.	7.	(20903)	10.
JEFFERSON	0.	0.	81.	16.	(22203)	3.
KANAWHA	0.	1.	86.	10.	(225689)	3.
LEWIS	0.	0.	78.	5.	(17847)	17.
LINCOLN	2.	12.	84.	2.	(20092)	0.
LOGAN	0.	0.	90.	3.	(41931)	7.
MARION	0.	10.	65.	25.	(61758)	0.
MARSHALL	0.	6.	46.	21.	(32022)	27.

TABLE 3.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 2

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
WEST VIRGINIA						
MASON	0.	7.	56.	22.	(24306)	15.
MCDOWELL	0.	0.	86.	9.	(50265)	5.
MERCER	0.	0.	74.	15.	(63399)	11.
MINERAL	0.	1.	90.	4.	(22113)	5.
MINGO	0.	2.	87.	6.	(35132)	5.
MONONGALIA	0.	0.	53.	0.	(62829)	47.
MONROE	0.	0.	75.	11.	(9595)	14.
MORGAN	0.	3.	71.	15.	(7907)	11.
NICHOLAS	0.	0.	93.	6.	(21994)	1.
OHIO	0.	0.	65.	13.	(66668)	22.
PENDLETON	0.	0.	0.	0.	(7031)	100.
PLEASANTS	0.	0.	85.	0.	(7274)	15.
POCAHONTAS	0.	0.	54.	34.	(8870)	12.
PRESTON	0.	0.	61.	0.	(25455)	39.
PUTNAM	0.	2.	94.	3.	(25270)	1.
RALEIGH	0.	2.	58.	26.	(71209)	14.
RANDOLPH	0.	0.	63.	11.	(24908)	26.
RITCHIE	0.	0.	98.	1.	(10030)	1.
ROANE	0.	3.	73.	4.	(14195)	20.
SUMMERS	0.	0.	59.	21.	(14504)	20.
TAYLOR	0.	0.	61.	17.	(13953)	22.
TUCKER	0.	0.	84.	2.	(7135)	14.
TYLER	0.	0.	98.	0.	(12478)	2.
UPSHUR	0.	0.	71.	6.	(18487)	23.
WAYNE	0.	5.	90.	5.	(35348)	0.
WEBSTER	0.	0.	100.	0.	(9566)	0.
WETZEL	0.	3.	74.	11.	(17765)	12.
WIRT	0.	0.	98.	2.	(4154)	0.
WOOD	0.	15.	62.	18.	(86818)	5.
WYOMING	0.	0.	97.	1.	(31901)	2.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ALABAMA						
AUTAUGA	24.	1.	71.	4.	(24460)	0.
BALDWIN	36.	8.	52.	2.	(59382)	2.
BARBOUR	17.	30.	38.	10.	(22720)	5.
BIBB	0.	19.	74.	6.	(11733)	1.
BLOUNT	0.	27.	64.	1.	(25543)	8.
BULLCCK	28.	20.	46.	6.	(12535)	0.
BUTLER	31.	14.	50.	3.	(21358)	2.
CALHOUN	0.	7.	57.	22.	(106039)	14.
CHAMBERS	6.	3.	30.	21.	(37430)	40.
CHEROKEE	1.	7.	80.	2.	(16155)	10.
CHILTON	4.	21.	61.	2.	(26051)	12.
CHOCTAW	20.	2.	30.	5.	(16589)	43.
CLARKE	19.	32.	41.	4.	(26724)	4.
CLAY	0.	12.	87.	1.	(12636)	0.
CLEBURNE	0.	27.	60.	12.	(9901)	1.
COFFEE	20.	36.	38.	6.	(35014)	0.
COLBERT	0.	4.	72.	5.	(48366)	19.
CONECUH	49.	10.	31.	6.	(15645)	4.
COOSA	0.	4.	79.	16.	(10426)	1.
COVINGTON	16.	7.	52.	18.	(34728)	7.
CRENSHAW	47.	6.	23.	7.	(13345)	17.
CULLMAN	0.	0.	68.	15.	(54596)	17.
DALE	47.	10.	33.	2.	(53726)	8.
DALLAS	31.	0.	49.	11.	(55296)	9.
DE KALB	2.	13.	64.	8.	(39934)	13.
ELMORE	11.	20.	53.	9.	(32682)	7.
ESCAMBIA	31.	15.	23.	20.	(34906)	11.
ETOWAH	1.	2.	84.	5.	(89917)	8.
FAYETTE	13.	13.	65.	8.	(15169)	1.
FRANKLIN	0.	13.	57.	8.	(24791)	22.
GENEVA	59.	4.	34.	2.	(23196)	1.
GREENE	18.	12.	64.	5.	(10212)	1.
HALE	24.	8.	64.	3.	(15903)	1.
HENRY	34.	10.	37.	0.	(12366)	19.
HOUSTON	25.	22.	34.	8.	(54372)	11.
JACKSON	1.	11.	62.	4.	(40464)	22.
JEFFERSON	0.	0.	87.	4.	(619923)	9.
LAMAR	0.	13.	84.	3.	(13513)	0.
LAUCERCALE	0.	1.	86.	6.	(68519)	7.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ALABAMA						
LAWRENCE	17.	14.	64.	2.	(27281)	3.
LEE	7.	15.	43.	15.	(54986)	20.
LIMESTONE	7.	9.	72.	9.	(41699)	3.
LOWNDES	28.	10.	39.	1.	(12897)	22.
MACON	12.	7.	13.	40.	(23854)	28.
MADISON	3.	0.	79.	14.	(189546)	4.
MARENGO	21.	20.	51.	3.	(24776)	5.
MARION	1.	13.	71.	5.	(24871)	10.
MARSHALL	0.	12.	66.	7.	(53387)	15.
MOBILE	48.	0.	46.	2.	(306601)	4.
MONROE	26.	28.	40.	3.	(19811)	3.
MONTGOMERY	27.	0.	51.	8.	(170868)	14.
MORGAN	9.	10.	53.	8.	(75932)	20.
PERRY	32.	0.	48.	0.	(14431)	20.
PICKENS	6.	21.	69.	2.	(20326)	2.
PIKE	23.	7.	41.	12.	(24881)	17.
RANDOLPH	0.	30.	62.	7.	(18702)	1.
RUSSELL	25.	0.	71.	2.	(51539)	2.
SHELBY	0.	0.	65.	1.	(38000)	34.
ST CLAIR	0.	46.	42.	7.	(26980)	5.
SUMTER	24.	3.	61.	0.	(17412)	12.
TALLADEGA	1.	0.	72.	16.	(65280)	10.
TALLAPOOSA	0.	8.	36.	40.	(30686)	16.
TUSCALOOSA	6.	3.	79.	2.	(117348)	10.
WALKER	0.	7.	71.	8.	(55904)	14.
WASHINGTON	61.	4.	28.	3.	(16241)	4.
WILCOX	32.	27.	31.	4.	(17375)	6.
WINSTON	0.	13.	77.	6.	(16654)	4.
FLORIDA						
ALACHUA	48.	0.	34.	6.	(107079)	12.
BAKER	31.	50.	16.	2.	(9242)	1.
BAY	42.	6.	26.	8.	(74695)	18.
BRADFORD	34.	0.	23.	12.	(15273)	31.
BREVARD	51.	3.	33.	8.	(228555)	5.
BROWARD	58.	0.	37.	1.	(604553)	4.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
FLORIDA						
CALHOUN	33.	12.	24.	11.	(9697)	20.
CHARLOTTE	28.	37.	27.	8.	(30216)	0.
CITRUS	42.	3.	46.	6.	(19650)	3.
CLAY	33.	25.	28.	11.	(21277)	3.
COLLIER	3.	59.	2.	36.	(39881)	0.
COLUMBIA	27.	4.	28.	28.	(25250)	13.
DADE	43.	2.	42.	6.	(1261672)	7.
DE SOTC	81.	0.	15.	3.	(13708)	1.
DIXIE	69.	0.	14.	17.	(5480)	0.
DUVAL	53.	0.	37.	2.	(530393)	7.
ESCAMBIA	48.	1.	40.	2.	(205086)	9.
FLAGLER	0.	9.	53.	17.	(4452)	21.
FRANKLIN	53.	15.	19.	4.	(6992)	9.
GADSDEN	38.	0.	33.	21.	(43057)	8.
GILCHRIST	57.	19.	21.	3.	(3551)	0.
GLADES	51.	17.	21.	8.	(2732)	3.
GULF	59.	1.	26.	12.	(10684)	2.
HAMILTON	70.	0.	22.	3.	(7787)	5.
HARDEE	71.	0.	22.	7.	(14889)	0.
HENDRY	70.	0.	27.	1.	(12993)	2.
HERNANDO	12.	14.	69.	5.	(16645)	0.
HIGHLANDS	10.	19.	42.	27.	(29507)	2.
HILLSBOROUGH	70.	2.	24.	4.	(486357)	0.
HOLMES	47.	9.	37.	2.	(10432)	5.
INDIAN RIVER	4.	26.	42.	20.	(37443)	8.
JACKSON	26.	5.	39.	14.	(33858)	16.
JEFFERSON	45.	0.	52.	1.	(8778)	2.
LAFAYETTE	0.	0.	71.	10.	(1783)	19.
LAKE	12.	3.	74.	8.	(69928)	3.
LEE	56.	3.	36.	4.	(101911)	1.
LEON	7.	0.	56.	18.	(89368)	19.
LEVY	73.	0.	21.	2.	(15410)	4.
LIBERTY	61.	0.	36.	3.	(1882)	0.
MADISON	50.	12.	32.	5.	(13481)	1.
MANATEE	11.	42.	22.	24.	(95880)	1.
MARION	35.	13.	35.	10.	(65737)	7.
MARTIN	12.	40.	26.	6.	(29308)	16.
MONROE	49.	3.	33.	8.	(53907)	7.
NASSAU	38.	4.	37.	15.	(18386)	6.

TAELE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
	FLORIDA					
CKALOOSA	55.	15.	26.	3.	(85863)	1.
OKEECHOBEE	79.	0.	18.	1.	(9745)	2.
ORANGE	50.	3.	35.	7.	(333343)	5.
OSCEOLA	37.	27.	32.	4.	(25267)	0.
PALM BEACH	44.	4.	43.	2.	(335001)	7.
PASCO	28.	23.	41.	8.	(60784)	0.
PINELLAS	39.	19.	25.	17.	(521360)	0.
POLK	18.	33.	20.	28.	(227222)	1.
PUTNAM	38.	2.	50.	7.	(40481)	3.
SANTA ROSA	18.	35.	28.	14.	(31807)	5.
SARASOTA	32.	4.	23.	26.	(118756)	15.
SEMINOLE	6.	55.	6.	33.	(62492)	0.
ST JOHNS	9.	1.	40.	36.	(25781)	14.
ST LUCIE	41.	12.	25.	17.	(50547)	5.
SUMTER	38.	23.	34.	3.	(14839)	2.
SUWANNEE	64.	0.	24.	4.	(16668)	8.
TAYLOR	35.	5.	30.	24.	(13641)	6.
UNICN	41.	0.	11.	2.	(8112)	46.
VOLUSIA	21.	5.	52.	12.	(167749)	10.
WAKULLA	69.	0.	31.	0.	(6381)	0.
WALTON	37.	0.	56.	5.	(18824)	2.
WASHINGTON	51.	4.	25.	9.	(11328)	11.
	GECRGIA					
APPLING	75.	0.	25.	0.	(12726)	0.
ATKINSCN	79.	0.	21.	0.	(6367)	0.
BACON	67.	0.	33.	0.	(8233)	0.
BAKER	50.	8.	42.	0.	(3846)	0.
BALDWIN	1.	0.	31.	10.	(34240)	58.
BANKS	0.	0.	44.	56.	(5008)	0.
BARROW	0.	31.	63.	4.	(16859)	2.
BARTOW	0.	5.	46.	29.	(32793)	20.
BEN HILL	12.	39.	37.	8.	(13171)	4.
BERRIEN	84.	0.	16.	0.	(11556)	0.
BIBB	2.	1.	91.	5.	(146424)	1.
BLECKLEY	12.	46.	35.	7.	(10586)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
GEORGIA						
BRANTLEY	50.	44.	6.	0.	(6231)	0.
BROOKS	61.	0.	28.	6.	(13580)	5.
BRYAN	77.	0.	21.	1.	(7690)	1.
BULLOCH	11.	35.	37.	7.	(30830)	10.
BURKE	33.	23.	32.	8.	(17942)	4.
BUTTS	9.	0.	88.	2.	(10560)	1.
CALHOUN	40.	0.	60.	0.	(7005)	0.
CAMDEN	25.	4.	58.	13.	(11334)	0.
CANDLER	57.	0.	38.	5.	(6766)	0.
CARROLL	0.	25.	38.	9.	(46995)	28.
CATOOSA	0.	3.	83.	12.	(29527)	2.
CHARLTON	72.	0.	28.	0.	(5680)	0.
CHATHAM	43.	0.	44.	5.	(180868)	8.
CHATTAHOOCHEE	4.	0.	27.	0.	(7026)	69.
CHATTOOGA	1.	21.	42.	4.	(20541)	32.
CHEROKEE	0.	0.	94.	2.	(33102)	4.
CLARKE	0.	0.	87.	1.	(62161)	12.
CLAY	19.	23.	58.	0.	(3636)	0.
CLAYTON	0.	5.	87.	7.	(97657)	1.
CLINCH	41.	0.	59.	0.	(6199)	0.
COBB	0.	5.	69.	8.	(193208)	18.
COFFEE	40.	8.	36.	10.	(22828)	6.
COLQUITT	25.	5.	22.	28.	(31285)	20.
COLUMBIA	25.	4.	71.	0.	(15653)	0.
COOK	69.	0.	27.	3.	(12129)	1.
COWETA	0.	9.	41.	36.	(32160)	14.
CRAWFORD	22.	9.	69.	0.	(4806)	0.
CRISP	57.	0.	40.	3.	(18553)	0.
DADE	0.	0.	46.	1.	(10987)	53.
DAWSON	0.	0.	100.	0.	(2120)	0.
DE KALB	0.	0.	73.	15.	(389312)	12.
DECATUR	35.	0.	63.	1.	(22310)	1.
DODGE	35.	1.	33.	27.	(15249)	4.
DOOLY	76.	0.	24.	0.	(8420)	0.
DOUGHERTY	43.	0.	41.	4.	(90603)	12.
DOUGLAS	0.	43.	45.	10.	(25583)	2.
EARLY	32.	18.	30.	19.	(12652)	1.
ECHOLS	90.	0.	10.	0.	(1924)	0.
EFFINGHAM	90.	0.	10.	0.	(14387)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
	GEORGIA					
ELBERT	2.	4.	62.	22.	(17262)	10.
EMANUEL	22.	9.	38.	16.	(18065)	15.
EVANS	12.	25.	57.	5.	(7434)	1.
FANNIN	0.	0.	100.	0.	(13819)	0.
FAYETTE	0.	15.	80.	3.	(11503)	2.
FLOYD	3.	17.	39.	26.	(75454)	15.
FORSYTH	0.	0.	93.	0.	(16999)	7.
FRANKLIN	0.	0.	100.	0.	(12840)	0.
FULTON	0.	2.	66.	11.	(605802)	21.
GILMER	0.	0.	75.	0.	(8956)	25.
GLASCOCK	53.	0.	47.	0.	(2323)	0.
GLYNN	56.	6.	25.	3.	(50237)	10.
GORDON	6.	0.	92.	1.	(21858)	1.
GRADY	57.	0.	42.	1.	(17315)	0.
GREENE	14.	0.	83.	0.	(10212)	3.
GWINNETT	0.	18.	50.	26.	(70769)	6.
HABERSHAM	0.	6.	21.	54.	(21434)	19.
HALL	0.	11.	44.	29.	(59617)	16.
HANCOCK	27.	0.	73.	0.	(9019)	0.
HARALSON	0.	0.	100.	0.	(14633)	0.
HARRIS	9.	0.	76.	2.	(12682)	13.
HART	8.	0.	77.	2.	(16420)	13.
HEARD	0.	15.	74.	10.	(5049)	1.
HENRY	1.	0.	98.	1.	(25372)	0.
HOUSTON	19.	1.	65.	6.	(62924)	9.
IRWIN	49.	10.	34.	1.	(8036)	6.
JACKSON	0.	5.	52.	17.	(22382)	26.
JASPER	0.	0.	100.	0.	(6281)	0.
JEFF DAVIS	61.	0.	39.	0.	(9948)	0.
JEFFERSON	32.	17.	45.	3.	(18027)	3.
JENKINS	58.	0.	42.	0.	(7967)	0.
JOHNSON	58.	0.	38.	4.	(6800)	0.
JONES	14.	0.	86.	0.	(8247)	0.
LAMAR	11.	0.	40.	39.	(10688)	10.
LANIER	24.	37.	37.	1.	(5031)	1.
LAURENS	21.	12.	13.	33.	(32947)	21.
LEE	62.	0.	38.	0.	(6253)	0.
LIBERTY	22.	11.	21.	24.	(17569)	22.
LINCOLN	17.	0.	83.	0.	(5895)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
GEORGIA						
LONG	79.	12.	9.	0.	(3746)	0.
LOWNDES	32.	2.	16.	24.	(55112)	26.
LUMPKIN	0.	0.	12.	47.	(7239)	41.
MACON	21.	35.	42.	1.	(13607)	1.
MADISON	0.	26.	73.	1.	(14803)	0.
MARION	31.	21.	46.	1.	(5099)	1.
MCDUFFIE	8.	48.	37.	5.	(15276)	2.
MCINTOSH	65.	6.	29.	0.	(7371)	0.
MERIWETHER	13.	4.	45.	32.	(19604)	6.
MILLER	72.	10.	14.	3.	(5885)	1.
MITCHELL	18.	27.	46.	6.	(18912)	3.
MONROE	4.	32.	51.	10.	(11154)	3.
MONTGOMERY	38.	12.	43.	6.	(5918)	1.
MORGAN	2.	0.	95.	0.	(8855)	3.
MURRAY	10.	0.	29.	0.	(12986)	61.
MUSCOGEE	4.	0.	90.	3.	(183449)	3.
NEWTON	0.	17.	52.	19.	(26307)	12.
OCONEE	0.	0.	96.	3.	(9486)	1.
OGLETHORPE	20.	26.	45.	9.	(7598)	0.
PAULDING	0.	26.	65.	8.	(16066)	1.
PEACH	5.	8.	23.	48.	(16932)	16.
PICKENS	0.	0.	0.	0.	(9534)	100.
PIERCE	31.	25.	34.	8.	(9281)	2.
PIKE	13.	47.	40.	0.	(6347)	0.
POLK	0.	11.	53.	28.	(29637)	8.
PULASKI	25.	1.	32.	32.	(8475)	10.
PUTNAM	3.	0.	97.	0.	(8394)	0.
QUITMAN	77.	5.	18.	0.	(2180)	0.
RABUN	0.	0.	99.	0.	(8259)	1.
RANDOLPH	36.	35.	24.	4.	(8734)	1.
RICHMOND	12.	0.	67.	7.	(169495)	14.
ROCKDALE	0.	1.	80.	11.	(18152)	8.
SCHLEY	66.	0.	34.	0.	(3097)	0.
SCREVEN	32.	28.	30.	5.	(12591)	5.
SEMINOLE	63.	0.	37.	0.	(7231)	0.
SPALDING	0.	1.	41.	48.	(40274)	10.
STEPHENS	0.	0.	85.	3.	(20331)	12.
STEWART	24.	5.	67.	4.	(6965)	0.
SUMTER	13.	2.	37.	38.	(27325)	10.

TABLE 8.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
GEORGIA						
TALBOT	16.	0.	83.	1.	(6482)	0.
TALIAFERRO	13.	0.	87.	0.	(2423)	0.
TATTNALL	45.	2.	28.	17.	(16413)	8.
TAYLOR	34.	8.	55.	0.	(7865)	3.
TELFAIR	41.	24.	27.	7.	(10880)	1.
TERRELL	62.	0.	31.	7.	(11416)	0.
THOMAS	20.	4.	38.	24.	(35229)	14.
TIFT	36.	3.	18.	13.	(28203)	30.
TOOMBS	24.	28.	36.	8.	(19261)	4.
TOWNS	0.	0.	57.	14.	(4127)	29.
TREUTLEN	58.	0.	42.	0.	(5647)	0.
TROUP	0.	18.	27.	38.	(49271)	17.
TURNER	23.	18.	40.	16.	(8790)	3.
TWIGGS	68.	2.	30.	0.	(8764)	0.
UNION	0.	35.	63.	2.	(8300)	0.
UPSON	5.	1.	49.	26.	(23505)	19.
WALKER	0.	0.	85.	5.	(50411)	10.
WALTON	0.	9.	80.	1.	(23604)	10.
WARE	33.	2.	12.	38.	(33243)	15.
WARREN	31.	14.	53.	1.	(6669)	1.
WASHINGTON	45.	2.	37.	12.	(16923)	4.
WAYNE	79.	0.	19.	1.	(17858)	1.
WEBSTER	46.	20.	34.	0.	(1908)	0.
WHEELER	43.	17.	39.	1.	(4574)	0.
WHITE	0.	0.	100.	0.	(8209)	0.
WHITFIELD	0.	10.	45.	31.	(53055)	14.
WILCOX	29.	29.	34.	1.	(6998)	7.
WILKES	7.	7.	56.	27.	(10184)	3.
WILKINSON	24.	0.	76.	0.	(8562)	0.
WORTH	35.	22.	33.	6.	(14133)	4.
KENTUCKY						
ADAIR	0.	0.	95.	2.	(13037)	3.
ALLEN	0.	0.	100.	0.	(12726)	0.
ANDERSCN	0.	0.	30.	0.	(9245)	70.
BALLARC	0.	0.	100.	0.	(8276)	0.

TAELE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
KENTUCKY						
BARREN	0.	0.	90.	3.	(28677)	7.
BATH	0.	23.	75.	2.	(9235)	0.
BELL	0.	0.	82.	3.	(32339)	15.
EOONE	0.	7.	88.	1.	(25002)	4.
BOURBON	0.	16.	58.	22.	(19427)	4.
BOYD	0.	0.	75.	24.	(56643)	1.
BOYLE	0.	5.	53.	26.	(21090)	16.
BRACKEN	0.	0.	98.	2.	(7067)	0.
BREATHITT	0.	0.	60.	1.	(14221)	39.
BRECKINRIDGE	0.	10.	85.	4.	(14685)	1.
BULLITT	0.	0.	94.	2.	(16876)	4.
BUTLER	0.	0.	100.	0.	(9723)	0.
CALDWELL	0.	0.	70.	6.	(12729)	24.
CALLOWAY	0.	0.	87.	6.	(27692)	7.
CAMPBELL	0.	3.	73.	15.	(84500)	9.
CARLISLE	0.	1.	99.	0.	(5354)	0.
CARROLL	0.	15.	63.	22.	(8255)	0.
CARTER	0.	0.	81.	0.	(20835)	19.
CASEY	0.	1.	75.	1.	(12930)	23.
CHRISTIAN	20.	18.	35.	10.	(56224)	17.
CLARK	0.	0.	86.	10.	(24090)	4.
CLAY	2.	0.	98.	0.	(18481)	0.
CLINTON	0.	0.	99.	1.	(8174)	0.
CRITTENDEN	0.	0.	85.	1.	(8943)	14.
CUMBERLAND	0.	7.	75.	3.	(6850)	15.
DAVIESS	0.	1.	88.	3.	(79486)	8.
EDMONSON	0.	0.	91.	0.	(9632)	9.
ELLIOTT	0.	1.	99.	0.	(5933)	0.
ESTILL	0.	0.	88.	3.	(12752)	9.
FAYETTE	0.	0.	84.	3.	(176407)	13.
FLEMING	0.	0.	58.	0.	(11498)	42.
FLOYD	0.	3.	52.	7.	(35889)	38.
FRANKLIN	0.	0.	12.	0.	(34594)	88.
FULTON	7.	0.	93.	0.	(11087)	0.
GALLATIN	0.	38.	38.	24.	(3966)	0.
GARRARD	0.	17.	60.	7.	(9457)	16.
GRANT	0.	42.	45.	13.	(9763)	0.
GRAVES	0.	19.	70.	8.	(30939)	3.
GRAYSON	0.	6.	91.	3.	(16445)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
KENTUCKY						
GREEN	0.	0.	90.	3.	(10350)	7.
GREENUP	0.	0.	93.	0.	(28984)	7.
HANCOCK	0.	46.	51.	3.	(6242)	0.
HARDIN	0.	0.	41.	25.	(79956)	34.
HARLAN	0.	6.	49.	7.	(38260)	38.
HARRISON	0.	0.	96.	2.	(12584)	2.
HART	0.	0.	99.	0.	(13938)	1.
HENDERSON	0.	6.	75.	8.	(36031)	11.
HENRY	0.	3.	63.	2.	(10533)	32.
HICKMAN	0.	0.	100.	0.	(5360)	0.
HOPKINS	0.	13.	68.	10.	(37941)	9.
JACKSON	0.	0.	72.	3.	(10005)	25.
JEFFERSON	0.	0.	84.	6.	(662835)	10.
JESSAMINE	0.	0.	58.	0.	(15474)	42.
JOHNSON	0.	12.	65.	20.	(17539)	3.
KENTON	0.	0.	79.	8.	(136086)	13.
KNOTT	0.	26.	73.	1.	(12282)	0.
KNOX	1.	0.	99.	0.	(19373)	0.
LARUE	0.	23.	70.	6.	(8875)	1.
LAUREL	0.	0.	98.	2.	(26088)	0.
LAWRENCE	0.	0.	91.	0.	(10726)	9.
LEE	0.	0.	47.	0.	(6587)	53.
LESLIE	0.	0.	98.	1.	(11623)	1.
LETCHER	0.	0.	70.	1.	(23489)	29.
LEWIS	0.	0.	100.	0.	(11311)	0.
LINCOLN	0.	0.	97.	0.	(16653)	3.
LIVINGSTON	0.	0.	98.	0.	(7158)	2.
LOGAN	0.	4.	33.	3.	(21793)	60.
LYON	0.	0.	0.	4.	(6000)	96.
MADISON	0.	0.	39.	6.	(42730)	55.
MAGOFFIN	0.	0.	100.	0.	(10443)	0.
MARION	0.	20.	57.	21.	(16714)	2.
MARSHALL	0.	0.	100.	0.	(19537)	0.
MARTIN	0.	0.	79.	0.	(9377)	21.
MASON	0.	9.	67.	14.	(16429)	10.
MCCRACKEN	0.	0.	84.	5.	(59125)	11.
MCCREARY	0.	0.	82.	0.	(12548)	18.
MCLEAN	0.	27.	62.	2.	(9535)	9.
MEADE	0.	0.	79.	0.	(17965)	21.

TABLE 8.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
KENTUCKY						
MENIFEE	0.	0.	42.	0.	(4050)	58.
MERCER	0.	0.	84.	8.	(15960)	8.
METCALFE	0.	0.	93.	0.	(8177)	7.
MONROE	0.	0.	100.	0.	(11514)	0.
MONTGOMERY	0.	0.	94.	4.	(15364)	2.
MORGAN	0.	0.	100.	0.	(10019)	0.
MUHLENBERG	0.	25.	65.	9.	(28039)	1.
NELSON	0.	23.	42.	32.	(24673)	3.
NICHOLAS	0.	0.	99.	0.	(8534)	1.
OHIO	0.	25.	57.	5.	(18790)	13.
OLDHAM	0.	0.	13.	14.	(14743)	73.
OWEN	0.	23.	75.	2.	(7906)	0.
OWSLEY	0.	0.	96.	3.	(5023)	1.
PENDLETON	0.	36.	56.	8.	(9949)	0.
PERRY	0.	0.	70.	6.	(26916)	24.
PIKE	0.	3.	59.	4.	(61059)	34.
POWELL	0.	0.	56.	0.	(7704)	44.
PULASKI	0.	12.	65.	13.	(35244)	10.
ROBERTSON	0.	0.	100.	0.	(2163)	0.
ROCKCASTLE	0.	0.	48.	0.	(12305)	52.
ROWAN	0.	11.	62.	22.	(17010)	5.
RUSSELL	0.	0.	87.	0.	(10542)	13.
SCOTT	0.	4.	69.	22.	(17525)	5.
SHELBY	0.	14.	63.	14.	(18647)	9.
SIMPSON	0.	0.	90.	0.	(13054)	10.
SPENCER	0.	0.	94.	0.	(5778)	6.
TAYLOR	0.	0.	42.	0.	(17138)	58.
TODD	0.	10.	87.	1.	(10823)	2.
TRIGG	0.	0.	100.	0.	(8620)	0.
TRIMBLE	0.	0.	94.	6.	(5349)	0.
UNION	0.	6.	83.	7.	(15882)	4.
WARREN	0.	10.	51.	4.	(57432)	35.
WASHINGTON	0.	23.	28.	46.	(10728)	3.
WAYNE	0.	10.	71.	4.	(14268)	15.
WEBSTER	0.	0.	96.	2.	(12533)	2.
WHITLEY	0.	0.	98.	1.	(28507)	1.
WOLFE	0.	0.	99.	0.	(5669)	1.
WOODFORD	0.	0.	53.	22.	(14434)	25.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MISSISSIPPI						
ADAMS	8.	0.	23.	49.	(37895)	20.
ALCORN	3.	29.	61.	5.	(25832)	2.
AMITE	47.	28.	25.	0.	(13792)	0.
ATTALA	25.	34.	40.	0.	(20844)	1.
BENTON	24.	23.	51.	2.	(7505)	0.
BOLIVAR	21.	35.	39.	4.	(48325)	1.
CALHOUN	38.	0.	62.	0.	(15538)	0.
CARROLL	38.	0.	54.	5.	(9397)	3.
CHICKASAW	53.	0.	45.	0.	(10680)	2.
CHOCTAW	29.	0.	71.	0.	(8665)	0.
CLAIBORNE	31.	3.	63.	3.	(11749)	0.
CLARKE	36.	17.	33.	13.	(15049)	1.
CLAY	45.	1.	51.	2.	(17949)	1.
COAHOMA	27.	18.	36.	15.	(41165)	4.
COPIAH	37.	0.	59.	2.	(23863)	2.
COVINGTON	41.	25.	34.	0.	(12840)	0.
DE SOTO	28.	5.	66.	1.	(35885)	0.
FORREST	21.	2.	41.	22.	(58869)	14.
FRANKLIN	32.	15.	51.	2.	(6786)	0.
GEORGE	41.	20.	34.	5.	(12459)	0.
GREENE	53.	6.	35.	5.	(6672)	1.
GRENADA	35.	25.	34.	5.	(20255)	1.
HANCOCK	18.	35.	36.	11.	(18216)	0.
HARRISON	69.	0.	25.	5.	(137866)	1.
HINDS	36.	4.	50.	3.	(229873)	7.
HOLMES	56.	0.	40.	4.	(20609)	0.
HUMPHREYS	46.	12.	34.	7.	(13836)	1.
ISSAQUENA	87.	0.	13.	0.	(1983)	0.
ITAWAMBA	4.	0.	96.	0.	(16847)	0.
JACKSON	59.	6.	33.	2.	(83862)	0.
JASPER	44.	0.	51.	5.	(14294)	0.
JEFFERSON	48.	0.	51.	0.	(7632)	1.
JEFFERSON DAVI	31.	7.	60.	2.	(14389)	0.
JONES	21.	15.	53.	7.	(59380)	4.
KEMPER	37.	0.	63.	0.	(9956)	0.
LAFAYETTE	3.	21.	63.	3.	(24356)	10.
LAMAR	36.	0.	63.	0.	(13359)	1.
LAUDERDALE	2.	2.	83.	7.	(67364)	6.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MISSISSIPPI						
LAWRENCE	47.	0.	50.	1.	(10988)	2.
LEAKE	63.	0.	35.	0.	(17085)	2.
LEE	8.	14.	66.	10.	(50983)	2.
LEFLORE	33.	33.	23.	9.	(43049)	2.
LINCOLN	31.	17.	43.	9.	(28074)	0.
LOWNDES	22.	16.	44.	17.	(48830)	1.
MADISON	26.	31.	27.	16.	(29822)	0.
MARION	23.	21.	49.	4.	(23175)	3.
MARSHALL	28.	7.	52.	11.	(24027)	2.
MONROE	21.	17.	50.	4.	(33133)	8.
MONTGOMERY	18.	0.	76.	2.	(12918)	4.
NESHOBA	11.	29.	56.	2.	(19863)	2.
NEWTON	25.	0.	71.	4.	(18973)	0.
NOXUBEE	40.	0.	60.	0.	(14679)	0.
OKTIBBEHA	22.	27.	30.	6.	(28762)	15.
PANOLA	44.	0.	55.	1.	(25516)	0.
PEARL RIVER	64.	0.	34.	1.	(27802)	1.
PERRY	55.	9.	35.	0.	(10640)	1.
PIKE	8.	33.	47.	10.	(31756)	2.
PONTOTOC	28.	0.	68.	3.	(19485)	1.
PRENTISS	5.	6.	79.	8.	(21480)	2.
QUITMAN	63.	0.	37.	0.	(17266)	0.
RANKIN	33.	8.	35.	16.	(30557)	8.
SCOTT	64.	0.	35.	0.	(22439)	1.
SHARKEY	39.	20.	38.	2.	(10384)	1.
SIMPSON	38.	0.	43.	10.	(18802)	9.
SMITH	59.	0.	41.	0.	(11103)	0.
STONE	65.	0.	35.	0.	(8101)	0.
SUNFLOWER	34.	35.	26.	4.	(36846)	1.
TALLAHATCHIE	60.	0.	39.	1.	(17857)	0.
TATE	53.	0.	47.	0.	(19193)	0.
TIPPAH	2.	9.	80.	6.	(15852)	3.
TISHOMINGO	1.	21.	78.	0.	(14940)	0.
TUNICA	76.	0.	24.	0.	(11854)	0.
UNION	24.	0.	72.	4.	(19027)	0.
WALTHALL	49.	0.	46.	4.	(12500)	1.
WARREN	12.	17.	55.	10.	(44981)	6.
WASHINGTON	53.	8.	31.	7.	(71049)	1.
WAYNE	47.	6.	41.	5.	(16948)	1.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MISSISSIPPI						
WEBSTER	34.	0.	65.	1.	(9459)	0.
WILKINSON	51.	0.	49.	0.	(11070)	0.
WINSTON	37.	16.	40.	5.	(19156)	2.
YALOBUSHA	21.	0.	78.	1.	(12519)	0.
YAZOO	18.	26.	51.	4.	(27304)	1.
NORTH CAROLINA						
ALAMANCE	0.	0.	93.	3.	(96214)	4.
ALEXANCER	0.	3.	96.	1.	(19466)	0.
ALLEGHANY	0.	0.	100.	0.	(7498)	0.
ANSON	0.	0.	93.	3.	(23051)	4.
ASHE	0.	0.	100.	0.	(19095)	0.
AVERY	0.	28.	34.	16.	(13143)	22.
BEAUFORT	43.	0.	35.	15.	(35980)	7.
BERTIE	46.	5.	44.	5.	(20155)	0.
BLADEN	47.	6.	37.	9.	(22544)	1.
BRUNSWICK	54.	1.	44.	0.	(24476)	1.
BUNCOMBE	0.	0.	70.	9.	(146998)	21.
BURKE	0.	5.	40.	20.	(59600)	35.
CABARRUS	0.	13.	36.	2.	(65621)	49.
CALDWELL	0.	11.	70.	11.	(56675)	8.
CAMDEN	62.	0.	38.	0.	(5500)	0.
CARTERET	39.	4.	34.	13.	(29560)	10.
CASWELL	0.	0.	100.	0.	(19055)	0.
CATAWBA	0.	14.	46.	26.	(91601)	14.
CHATHAM	0.	1.	92.	4.	(28619)	3.
CHEROKEE	0.	18.	74.	7.	(16330)	1.
CHOWAN	15.	10.	53.	21.	(11702)	1.
CLAY	0.	13.	85.	1.	(5180)	1.
CLEVELAND	0.	1.	61.	17.	(73131)	21.
COLUMBUS	45.	9.	38.	6.	(49138)	2.
CRAVEN	25.	1.	36.	24.	(63646)	14.
CUMBERLAND	11.	1.	67.	10.	(210898)	11.
CURRITUCK	59.	0.	33.	5.	(5531)	3.
DARE	6.	0.	87.	4.	(6487)	3.
CAVIDSCN	0.	8.	67.	15.	(89880)	10.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NORTH CAROLINA						
DAVIE	0.	0.	97.	0.	(19473)	3.
DUPLIN	19.	30.	39.	7.	(34735)	5.
DURHAM	0.	0.	79.	3.	(120620)	18.
EDGECOMBE	26.	13.	38.	11.	(54483)	12.
FORSYTH	0.	5.	76.	12.	(206723)	7.
FRANKLIN	7.	0.	74.	16.	(27214)	3.
GASTON	0.	13.	52.	15.	(147937)	20.
GATES	66.	0.	32.	2.	(8524)	0.
GRAHAM	0.	6.	65.	3.	(6562)	26.
GRANVILLE	8.	1.	88.	2.	(32762)	1.
GREENE	52.	0.	47.	0.	(15794)	1.
GUILFORD	0.	0.	86.	6.	(276933)	8.
HALIFAX	17.	3.	59.	15.	(53261)	6.
HARNETT	22.	0.	58.	16.	(49872)	4.
HAYWOOD	0.	0.	86.	5.	(40892)	9.
HENDERSON	0.	6.	43.	33.	(42136)	18.
HERTFORD	34.	0.	61.	4.	(23529)	1.
HOKE	27.	8.	31.	18.	(18004)	16.
HYDE	58.	0.	42.	0.	(6817)	0.
IREDELL	0.	4.	86.	4.	(71687)	6.
JACKSON	0.	1.	65.	10.	(22173)	24.
JOHNSTON	3.	21.	51.	17.	(61784)	8.
JONES	51.	0.	44.	4.	(7169)	1.
LEE	0.	8.	73.	13.	(31402)	6.
LENOIR	32.	0.	58.	6.	(59119)	4.
LINCOLN	0.	13.	65.	14.	(32682)	8.
MACON	0.	8.	64.	18.	(15788)	10.
MADISON	0.	8.	70.	13.	(16003)	9.
MARTIN	25.	14.	43.	13.	(24570)	5.
MCDOWELL	0.	4.	57.	23.	(30706)	16.
MECKLENBURG	0.	1.	77.	21.	(330119)	1.
MITCHELL	0.	9.	87.	2.	(13447)	2.
MONTGOMERY	0.	0.	94.	3.	(19267)	3.
MOORE	0.	15.	71.	10.	(39206)	4.
NASH	18.	12.	47.	15.	(59559)	8.
NEW HANOVER	25.	0.	61.	4.	(83364)	10.
NORTHAMPTON	46.	10.	44.	0.	(23038)	0.
ONSLOW	58.	8.	22.	9.	(104550)	3.
ORANGE	0.	4.	26.	18.	(57511)	52.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NORTH CAROLINA						
PAMLICO	73.	3.	24.	0.	(9467)	0.
PASQUOTANK	19.	0.	63.	14.	(27484)	4.
PENDER	39.	1.	57.	3.	(20256)	0.
PERQUIMANS	63.	0.	37.	0.	(7786)	0.
PERSON	0.	14.	59.	22.	(25914)	5.
PITT	21.	7.	35.	19.	(71630)	18.
POLK	0.	4.	46.	39.	(11735)	11.
RANDOLPH	0.	0.	98.	1.	(66085)	1.
RICHMOND	2.	1.	88.	4.	(39889)	5.
ROBESON	36.	15.	29.	13.	(85743)	7.
ROCKINGHAM	0.	11.	62.	18.	(71337)	9.
ROWAN	0.	10.	65.	10.	(99043)	15.
RUTHERFORD	0.	20.	46.	23.	(46448)	11.
SAMPSON	43.	7.	32.	10.	(46063)	8.
SCOTLAND	42.	3.	46.	5.	(26028)	4.
STANLY	0.	0.	55.	21.	(41646)	24.
STOKES	0.	0.	100.	0.	(23440)	0.
SURRY	0.	2.	70.	19.	(55888)	9.
SWAIN	0.	24.	49.	25.	(7281)	2.
TRANSYLVANIA	0.	8.	39.	29.	(19713)	24.
TYRRELL	45.	12.	43.	0.	(3753)	0.
UNION	3.	1.	73.	13.	(57556)	10.
VANCE	0.	18.	61.	15.	(33734)	6.
WAKE	0.	0.	74.	11.	(209852)	15.
WARREN	3.	0.	96.	0.	(15200)	1.
WASHINGTON	34.	2.	53.	6.	(14973)	5.
WATAUGA	0.	5.	52.	11.	(23904)	32.
WAYNE	50.	1.	39.	10.	(84897)	0.
WILKES	0.	18.	57.	17.	(47315)	8.
WILSON	30.	0.	44.	19.	(57259)	7.
YADKIN	0.	17.	79.	4.	(22971)	0.
YANCEY	0.	7.	90.	3.	(12629)	0.
SOUTH CAROLINA						
ABBEVILLE	2.	0.	87.	8.	(21247)	3.
AIKEN	8.	8.	64.	8.	(93551)	12.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
SOUTH CAROLINA						
ALLENDALE	39.	14.	41.	4.	(9105)	2.
ANDERSCN	0.	13.	49.	25.	(101983)	13.
BAMBERG	29.	17.	36.	13.	(16118)	5.
BARNWELL	21.	18.	48.	13.	(17176)	0.
BEAUFORT	51.	1.	38.	3.	(51129)	8.
BERKELEY	46.	9.	30.	14.	(32553)	1.
CALHOUN	14.	22.	41.	18.	(10780)	5.
CHARLESTON	51.	0.	43.	5.	(271570)	1.
CHERCKEE	0.	10.	38.	39.	(36791)	13.
CHESTER	5.	12.	45.	26.	(32438)	12.
CHESTERFIELD	14.	28.	55.	2.	(34065)	1.
CLARENCON	54.	6.	33.	7.	(26962)	0.
COLLETCN	42.	2.	43.	11.	(26059)	2.
DARLINGTON	21.	15.	42.	22.	(50785)	0.
DILLCN	54.	9.	31.	6.	(30019)	0.
DORCHESTER	29.	19.	47.	2.	(30798)	3.
EDGEFIELD	10.	35.	48.	7.	(12970)	0.
FAIRFIELD	8.	10.	57.	10.	(17965)	15.
FLORENCE	30.	30.	23.	17.	(92299)	0.
GEORGETOWN	23.	25.	36.	16.	(34229)	0.
GREENVILLE	0.	1.	87.	9.	(241315)	3.
GREENWCOD	1.	11.	17.	39.	(50631)	32.
HAMPTON	43.	13.	39.	3.	(17445)	2.
HORRY	41.	6.	40.	8.	(70541)	5.
JASPER	57.	16.	26.	1.	(10912)	0.
KERSHAW	7.	4.	44.	45.	(33475)	0.
LANCASTER	0.	24.	22.	32.	(41922)	22.
LAURENS	0.	10.	43.	30.	(47366)	17.
LEE	49.	10.	36.	5.	(19464)	0.
LEXINGTON	7.	0.	87.	2.	(90225)	4.
MARICN	26.	40.	30.	4.	(28540)	0.
MARLBCRO	24.	27.	36.	11.	(26753)	2.
MCCORMICK	0.	21.	50.	5.	(8024)	24.
NEWBERRY	3.	21.	45.	31.	(30492)	0.
OCONEE	0.	13.	58.	29.	(37950)	0.
ORANGEBURG	37.	5.	22.	30.	(70932)	6.
PICKENS	0.	5.	28.	25.	(63460)	42.
RICHLAND	10.	0.	77.	4.	(234079)	9.
SALUDA	12.	26.	56.	6.	(14160)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
SOUTH CAROLINA						
SPARTANBURG	0.	9.	67.	14.	(174744)	10.
SUMTER	38.	16.	27.	16.	(77344)	3.
UNION	0.	9.	12.	40.	(27924)	39.
WILLIAMSBURG	59.	8.	29.	4.	(34195)	0.
YORK	0.	18.	46.	36.	(88031)	0.
TENNESSEE						
ANDERSON	0.	0.	63.	18.	(61494)	19.
BEDFORD	0.	15.	60.	21.	(24613)	4.
BENTON	0.	0.	100.	0.	(14069)	0.
BLEDSOE	0.	0.	91.	8.	(5894)	1.
BLOUNT	0.	0.	86.	5.	(63385)	9.
BRADLEY	0.	1.	80.	9.	(51310)	10.
CAMPBELL	0.	1.	65.	8.	(26048)	26.
CANNON	1.	0.	90.	3.	(8467)	6.
CARROLL	0.	0.	99.	0.	(27664)	1.
CARTER	0.	3.	61.	20.	(40793)	16.
CHEATHAM	0.	0.	98.	1.	(14415)	1.
CHESTER	0.	37.	57.	6.	(13376)	0.
CLAIBORNE	0.	0.	78.	1.	(18945)	21.
CLAY	0.	0.	71.	2.	(6624)	27.
COCKE	0.	10.	77.	11.	(25283)	2.
COFFEE	0.	24.	63.	6.	(34087)	7.
CROCKETT	18.	25.	53.	4.	(14406)	0.
CUMBERLAND	0.	21.	56.	9.	(21449)	14.
DAVIDSON	0.	2.	80.	7.	(460719)	11.
DE KALB	0.	19.	69.	3.	(10579)	9.
DECATUR	0.	0.	100.	0.	(8475)	0.
DICKSON	0.	0.	55.	1.	(21385)	44.
DYER	9.	7.	47.	30.	(30427)	7.
FAYETTE	40.	7.	53.	0.	(22815)	0.
FENTRESS	0.	0.	73.	2.	(11805)	25.
FRANKLIN	0.	9.	69.	15.	(27767)	7.
GIBSON	3.	14.	63.	11.	(47126)	9.
GILES	0.	0.	95.	3.	(22138)	2.
GRAINGER	0.	0.	79.	0.	(14290)	21.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TENNESSEE						
GREENE	0.	12.	64.	16.	(47630)	8.
GRUNDY	0.	0.	82.	0.	(11051)	18.
HAMBLEN	0.	28.	47.	14.	(38696)	11.
HAMILTON	0.	1.	85.	4.	(253394)	10.
HANCOCK	0.	0.	59.	0.	(7042)	41.
HARDEMAN	8.	0.	88.	2.	(21655)	2.
HARDIN	1.	15.	73.	7.	(19433)	4.
HAWKINS	0.	0.	81.	11.	(32880)	8.
HAYWOOD	30.	0.	69.	1.	(18857)	0.
HENDERSON	0.	0.	99.	0.	(18693)	1.
HENRY	0.	0.	99.	0.	(23489)	1.
HICKMAN	0.	0.	78.	5.	(12096)	17.
HOUSTON	0.	0.	97.	2.	(6261)	1.
HUMPHREYS	0.	0.	45.	0.	(11361)	55.
JACKSON	0.	0.	96.	4.	(7336)	0.
JEFFERSON	0.	0.	76.	10.	(24940)	14.
JOHNSON	0.	0.	100.	0.	(11569)	0.
KNOX	0.	3.	81.	4.	(276469)	12.
LAKE	56.	0.	44.	0.	(7896)	0.
LAUDERDALE	1.	23.	75.	1.	(21010)	0.
LAWRENCE	0.	0.	99.	0.	(29097)	1.
LEWIS	0.	0.	98.	2.	(6761)	0.
LINCOLN	0.	0.	85.	11.	(24779)	4.
LOUDON	0.	28.	51.	14.	(24266)	7.
MACON	0.	0.	98.	1.	(12315)	1.
MADISON	1.	1.	65.	18.	(61102)	15.
MARION	0.	20.	64.	9.	(20157)	7.
MARSHALL	3.	35.	45.	13.	(16531)	4.
MAURY	0.	25.	49.	17.	(43953)	9.
MCMINN	0.	1.	78.	18.	(34838)	3.
MCNAIRY	6.	12.	76.	6.	(17862)	0.
MEIGS	0.	2.	96.	2.	(5219)	0.
MONROE	0.	0.	56.	0.	(23834)	44.
MONTGOMERY	0.	0.	72.	11.	(62721)	17.
MOORE	0.	0.	77.	9.	(2283)	14.
MORGAN	0.	0.	29.	5.	(13585)	66.
OBION	1.	8.	71.	11.	(30681)	9.
OVERTON	0.	0.	93.	1.	(16177)	6.
PERRY	0.	0.	89.	1.	(5238)	10.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 3

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TENNESSEE						
PICKETT	0.	0.	98.	0.	(3251)	2.
POLK	0.	16.	53.	1.	(11669)	30.
PUTNAM	0.	4.	54.	10.	(36327)	32.
RHEA	0.	21.	54.	19.	(17628)	6.
RCANE	0.	20.	67.	6.	(37718)	7.
ROBERTSON	0.	0.	75.	3.	(29092)	22.
RUTHERFORD	1.	0.	73.	18.	(59428)	8.
SCOTT	0.	0.	86.	2.	(14762)	12.
SEQUATCHIE	0.	12.	67.	5.	(6938)	16.
SEVIER	0.	3.	83.	4.	(28241)	10.
SHELBY	29.	0.	60.	2.	(716359)	9.
SMITH	0.	0.	80.	6.	(13572)	14.
STEWART	0.	0.	92.	4.	(6885)	4.
SULLIVAN	0.	0.	82.	6.	(125410)	12.
SUMNER	0.	0.	75.	4.	(40777)	21.
TIPTON	23.	0.	76.	1.	(28001)	0.
TROUSDALE	0.	0.	88.	2.	(5155)	10.
UNICOI	0.	0.	97.	1.	(15254)	2.
UNION	0.	32.	61.	3.	(8172)	4.
VAN BUREN	0.	0.	0.	0.	(3128)	100.
WARREN	0.	3.	55.	13.	(26163)	29.
WASHINGTON	0.	22.	49.	9.	(77625)	20.
WAYNE	0.	0.	85.	3.	(11628)	12.
WEAKLEY	0.	8.	45.	19.	(28566)	28.
WHITE	0.	0.	61.	10.	(19064)	29.
WILLIAMSON	0.	0.	90.	3.	(32879)	7.
WILSON	0.	0.	89.	5.	(36999)	6.

TABLE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
	ILLINCIS					
ADAMS	0.	0.	74.	12.	(70422)	14.
ALEXANCER	0.	0.	22.	41.	(12015)	37.
BCND	0.	0.	94.	3.	(14431)	3.
BCONE	0.	0.	85.	13.	(25440)	2.
BROWN	0.	0.	100.	0.	(5388)	0.
BUREAU	0.	0.	95.	4.	(38371)	1.
CALHOUN	0.	0.	100.	0.	(5054)	0.
CARRCLL	0.	7.	72.	13.	(18401)	8.
CASS	0.	0.	100.	0.	(15584)	0.
CHAMPAIGN	0.	0.	63.	6.	(158512)	31.
CHRISTIAN	0.	0.	81.	14.	(36257)	5.
CLARK	0.	0.	91.	2.	(16216)	7.
CLAY	0.	0.	90.	5.	(15808)	5.
CLINTCN	0.	0.	93.	4.	(25628)	3.
COLES	0.	1.	36.	35.	(46018)	28.
COOK	0.	0.	85.	3.	(5429226)	12.
CRAWFORD	0.	0.	79.	13.	(19938)	8.
CUMBERLAND	0.	0.	100.	0.	(11569)	0.
DE KALE	0.	0.	64.	12.	(80440)	24.
DE WITT	0.	0.	96.	3.	(16723)	1.
DOUGLAS	0.	3.	73.	19.	(21035)	5.
DU PAGE	0.	0.	90.	3.	(483240)	7.
ECGAR	0.	9.	60.	20.	(21591)	11.
EDWARDS	0.	0.	88.	6.	(6719)	6.
EFFINGHAM	0.	0.	50.	15.	(25357)	35.
FAYETTE	0.	0.	62.	22.	(21686)	16.
FORC	0.	0.	72.	17.	(17090)	11.
FRANKLIN	0.	13.	69.	10.	(39003)	8.
FULTCN	0.	0.	77.	10.	(44087)	13.
GALLATIN	0.	0.	100.	0.	(6878)	0.
GREENE	0.	0.	91.	2.	(19085)	7.
GRUNDY	0.	4.	67.	18.	(25604)	11.
HAMILTCN	0.	7.	77.	10.	(7638)	6.
HANCOCK	0.	0.	89.	3.	(24562)	8.
HARDIN	0.	0.	0.	0.	(5137)	100.
HENDERSON	0.	0.	100.	0.	(8173)	0.
HENRY	0.	0.	85.	9.	(53653)	6.
IROQUOIS	0.	0.	71.	16.	(30468)	13.
JACKSON	0.	0.	68.	5.	(54870)	27.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ILLINOIS						
JASPER	0.	0.	99.	0.	(9821)	1.
JEFFERSON	0.	2.	62.	18.	(31452)	18.
JERSEY	0.	0.	92.	6.	(14131)	2.
JO DAVIESS	0.	0.	98.	0.	(21815)	2.
JOHNSON	0.	0.	74.	3.	(7627)	23.
KANE	0.	0.	80.	11.	(248498)	9.
KANKAKEE	0.	5.	59.	19.	(99142)	17.
KENDALL	0.	0.	80.	2.	(19040)	18.
KNOX	0.	0.	90.	5.	(62530)	5.
LA SALLE	0.	0.	69.	13.	(117248)	18.
LAKE	0.	0.	71.	12.	(367793)	17.
LAWRENCE	0.	0.	57.	21.	(18081)	22.
LEE	0.	0.	37.	19.	(36704)	44.
LIVINGSTON	0.	0.	59.	23.	(37155)	18.
LOGAN	0.	0.	71.	19.	(33683)	10.
MACON	0.	0.	87.	5.	(113872)	8.
MACOUPIN	0.	0.	97.	2.	(47566)	1.
MADISON	0.	2.	74.	17.	(240575)	7.
MARION	0.	0.	78.	19.	(42933)	3.
MARSHALL	0.	0.	92.	6.	(12746)	2.
MASON	0.	0.	90.	6.	(15209)	4.
MASSAC	0.	0.	65.	8.	(14158)	27.
MCDONOUGH	0.	0.	39.	2.	(36653)	59.
MCHENRY	0.	1.	63.	24.	(104529)	12.
MCLEAN	0.	0.	60.	4.	(94875)	36.
MENARD	0.	0.	86.	13.	(9335)	1.
MERCER	0.	0.	92.	6.	(16237)	2.
MONROE	0.	0.	77.	5.	(19445)	18.
MONTGOMERY	0.	1.	60.	14.	(29366)	25.
MORGAN	0.	1.	19.	39.	(36285)	41.
MOULTRIE	0.	0.	61.	17.	(12582)	22.
OGLE	0.	0.	98.	2.	(42440)	0.
PEORIA	0.	2.	71.	17.	(186704)	10.
PERRY	0.	17.	42.	16.	(18362)	25.
PIATT	0.	0.	60.	24.	(14615)	16.
PIKE	0.	0.	89.	0.	(19934)	11.
POPE	0.	0.	95.	5.	(3039)	0.
PULASKI	0.	0.	95.	1.	(8741)	4.
PUTNAM	0.	0.	55.	0.	(4679)	45.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ILLINOIS						
RANDOLPH	0.	0.	56.	8.	(35048)	36.
RICHLAND	0.	0.	67.	11.	(16657)	22.
ROCK ISLAND	0.	0.	76.	5.	(160229)	19.
SALINE	0.	12.	55.	20.	(25899)	13.
SANGAMON	0.	0.	76.	5.	(158842)	19.
SCHUYLER	0.	0.	96.	2.	(7084)	2.
SCOTT	0.	0.	100.	0.	(5494)	0.
SHELBY	0.	0.	91.	6.	(18882)	3.
ST CLAIR	0.	0.	78.	5.	(271815)	17.
STARK	0.	0.	100.	0.	(7510)	0.
STEPHENSON	0.	0.	87.	4.	(48545)	9.
TAZEWELL	0.	4.	78.	12.	(109126)	6.
UNION	0.	0.	74.	5.	(15968)	21.
VERMILION	0.	0.	73.	10.	(96726)	17.
WABASH	0.	0.	72.	16.	(12794)	12.
WARREN	0.	0.	94.	2.	(19661)	4.
WASHINGTON	0.	0.	91.	0.	(11905)	9.
WAYNE	0.	0.	89.	5.	(15582)	6.
WHITE	0.	0.	88.	7.	(19387)	5.
WHITESIDE	0.	4.	36.	22.	(61464)	38.
WILL	0.	0.	89.	3.	(220694)	8.
WILLIAMSON	0.	9.	68.	9.	(49263)	14.
WINNEBAGO	0.	0.	81.	6.	(234296)	13.
WOODFORD	0.	0.	83.	9.	(27585)	8.
INDIANA						
ADAMS	0.	11.	51.	37.	(27475)	1.
ALLEN	0.	6.	66.	20.	(264778)	8.
BARTHOLOMEW	0.	1.	45.	53.	(55265)	1.
BENTON	0.	3.	91.	2.	(10745)	4.
BLACKFORD	0.	26.	55.	16.	(15686)	3.
BOONE	0.	2.	79.	3.	(32918)	16.
BROWN	0.	0.	100.	0.	(8374)	0.
CARROLL	0.	1.	62.	34.	(15298)	3.
CASS	0.	7.	43.	35.	(39566)	15.
CLARK	0.	2.	90.	3.	(69896)	5.

TABLE 8.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
INDIANA						
CLAY	0.	19.	40.	20.	(25925)	21.
CLINTON	0.	2.	74.	14.	(27578)	10.
CRAWFORD	0.	0.	0.	0.	(6721)	100.
DAVIESS	0.	28.	38.	30.	(27515)	4.
DE KALB	0.	0.	77.	16.	(30424)	7.
DEARBORN	0.	9.	47.	36.	(29395)	8.
DECATUR	0.	9.	60.	25.	(21509)	6.
DELAWARE	0.	0.	76.	24.	(119421)	0.
DUBOIS	0.	21.	60.	15.	(29502)	4.
ELKHART	0.	0.	82.	7.	(130041)	11.
FAYETTE	0.	0.	81.	10.	(23843)	9.
FLOYD	0.	0.	81.	2.	(56029)	17.
FOUNTAIN	0.	2.	82.	16.	(19802)	0.
FRANKLIN	0.	5.	52.	24.	(14523)	19.
FULTON	0.	0.	93.	5.	(16911)	2.
GIBSON	0.	23.	56.	19.	(30403)	2.
GRANT	0.	1.	93.	3.	(84058)	3.
GREENE	0.	2.	93.	5.	(31201)	0.
HAMILTON	0.	22.	29.	43.	(47080)	6.
HANCOCK	0.	8.	71.	20.	(34620)	1.
HARRISON	0.	0.	100.	0.	(20327)	0.
HENDRICKS	0.	16.	70.	5.	(43405)	9.
HENRY	0.	6.	50.	30.	(51275)	14.
HOWARD	0.	12.	59.	21.	(82740)	8.
HUNTINGTON	0.	14.	48.	24.	(34970)	14.
JACKSON	0.	0.	90.	5.	(33126)	5.
JASPER	0.	13.	54.	19.	(20510)	14.
JAY	0.	0.	82.	6.	(23407)	12.
JEFFERSON	0.	0.	59.	17.	(28378)	24.
JENNINGS	0.	24.	53.	4.	(18260)	19.
JOHNSON	0.	5.	73.	12.	(50484)	10.
KNOX	0.	8.	38.	43.	(41273)	11.
KOSCIUSKO	0.	9.	68.	22.	(46194)	1.
LA PORTE	0.	0.	63.	10.	(105973)	27.
LAGRANGE	0.	23.	62.	10.	(22390)	5.
LAKE	0.	0.	91.	3.	(530630)	6.
LAWRENCE	0.	5.	52.	27.	(39472)	16.
MADISON	0.	3.	68.	8.	(139464)	21.
MARION	0.	0.	83.	8.	(808749)	9.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
INDIANA						
MARSHALL	0.	0.	84.	7.	(37430)	9.
MARTIN	0.	8.	61.	1.	(10411)	30.
MIAMI	0.	24.	53.	21.	(40134)	2.
MONROE	0.	8.	74.	17.	(77213)	1.
MONTGOMERY	0.	0.	81.	3.	(34933)	16.
MORGAN	0.	15.	58.	9.	(40938)	18.
NEWTON	0.	21.	63.	15.	(8653)	1.
NOBLE	0.	15.	67.	14.	(28698)	4.
OHIO	0.	21.	68.	9.	(5210)	2.
ORANGE	0.	27.	37.	2.	(16968)	34.
OWEN	0.	5.	61.	29.	(14633)	5.
PARKE	0.	0.	89.	0.	(10710)	11.
PERRY	0.	25.	50.	24.	(19586)	1.
PIKE	0.	36.	59.	5.	(12456)	0.
PORTER	0.	0.	70.	10.	(81939)	20.
POSEY	0.	8.	62.	17.	(19379)	13.
PULASKI	0.	0.	99.	0.	(13912)	1.
PUTNAM	0.	7.	44.	18.	(26597)	31.
RANDOLPH	0.	0.	85.	9.	(28915)	6.
RIPLEY	0.	9.	72.	13.	(24915)	6.
RUSH	0.	0.	86.	5.	(19785)	9.
SCOTT	0.	0.	94.	2.	(16355)	4.
SHELBY	0.	5.	73.	16.	(37185)	6.
SPENCER	0.	2.	67.	17.	(14514)	14.
ST JOSEPH	0.	0.	83.	4.	(221841)	13.
STARKE	0.	7.	73.	20.	(18173)	0.
STEUBEN	0.	0.	86.	6.	(20094)	8.
SULLIVAN	0.	18.	43.	17.	(17404)	22.
SWITZERLAND	0.	34.	37.	25.	(5032)	4.
TIPPECANOE	0.	1.	71.	11.	(109734)	17.
TIPTON	0.	0.	98.	2.	(15405)	0.
UNION	0.	4.	40.	56.	(4799)	0.
VANDERBURGH	0.	0.	76.	17.	(174472)	7.
VERMILLION	0.	10.	78.	9.	(20086)	3.
VIGO	0.	0.	53.	13.	(110184)	34.
WABASH	0.	0.	73.	16.	(35553)	11.
WARREN	0.	3.	82.	5.	(7287)	10.
WARRICK	0.	8.	78.	6.	(27651)	8.
WASHINGTON	0.	0.	96.	3.	(20677)	1.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
INDIANA						
WAYNE	0.	0.	68.	15.	(83114)	17.
WELLS	0.	3.	51.	46.	(22690)	0.
WHITE	0.	0.	99.	0.	(22861)	1.
WHITLEY	0.	6.	60.	26.	(24168)	8.
MICHIGAN						
ALCONA	0.	0.	99.	0.	(7144)	1.
ALGER	0.	0.	62.	14.	(8208)	24.
ALLEGAN	0.	0.	85.	10.	(60857)	5.
ALPENA	0.	0.	60.	9.	(30174)	31.
ANTRIM	0.	0.	93.	2.	(9927)	5.
ARENAC	0.	14.	71.	15.	(10743)	0.
BARAGA	0.	0.	88.	8.	(7733)	4.
BARRY	0.	0.	87.	9.	(32924)	4.
BAY	0.	0.	82.	7.	(107464)	11.
BENZIE	0.	0.	79.	7.	(9100)	14.
BERRIEN	0.	2.	72.	15.	(168183)	11.
BRANCH	0.	0.	58.	25.	(33902)	17.
CALHOUN	0.	0.	65.	14.	(144410)	21.
CASS	0.	0.	89.	8.	(41602)	3.
CHARLEVOIX	0.	0.	91.	3.	(17386)	6.
CHEBOYGAN	0.	0.	83.	2.	(14917)	15.
CHIPPEWA	0.	8.	53.	20.	(31328)	19.
CLARE	0.	0.	88.	6.	(17675)	6.
CLINTON	0.	0.	84.	8.	(35551)	8.
CRAWFORD	0.	0.	64.	24.	(6426)	12.
DELTA	0.	0.	60.	22.	(37340)	18.
DICKINSON	0.	35.	15.	18.	(23926)	32.
EATON	0.	2.	81.	11.	(69022)	6.
EMMET	0.	0.	50.	31.	(18278)	19.
GENESEE	0.	0.	87.	5.	(415688)	8.
GLADWIN	0.	1.	96.	1.	(11830)	2.
GOGEBIC	0.	0.	46.	19.	(20676)	35.
GRAND TRAVERSE	0.	0.	30.	3.	(43028)	67.
GRATIOT	0.	0.	73.	17.	(39612)	10.
HILLSDALE	0.	1.	61.	16.	(35569)	22.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MICHIGAN						
HOUGHTCN	0.	0.	40.	8.	(34958)	52.
HURON	0.	0.	94.	1.	(35674)	5.
INGHAM	0.	3.	66.	20.	(264051)	11.
IONIA	0.	8.	55.	22.	(47198)	15.
IOSCO	0.	9.	81.	9.	(25211)	1.
IRON	0.	11.	4.	40.	(13640)	45.
ISABELLA	0.	0.	39.	41.	(42998)	20.
JACKSON	0.	0.	76.	9.	(137690)	15.
KALAMAZOO	0.	0.	73.	12.	(201767)	15.
KALKASKA	0.	0.	96.	2.	(4992)	2.
KENT	0.	1.	61.	34.	(409501)	4.
KEWEENAW	0.	0.	100.	0.	(1958)	0.
LAKE	0.	0.	98.	0.	(4204)	2.
LAPEER	0.	0.	87.	2.	(50749)	11.
LEELANAU	0.	0.	81.	8.	(10012)	11.
LENAWEE	0.	0.	62.	17.	(80250)	21.
LIVINGSTON	0.	4.	70.	21.	(51073)	5.
LUCE	0.	10.	40.	34.	(7846)	16.
MACKINAC	0.	15.	42.	29.	(11144)	14.
MACOMB	0.	1.	75.	15.	(608544)	9.
MANISTEE	0.	0.	39.	30.	(19700)	31.
MARQUETTE	0.	9.	10.	28.	(64566)	53.
MASON	0.	0.	88.	8.	(22553)	4.
MECOSTA	0.	0.	82.	8.	(28890)	10.
MENOMINEE	0.	0.	55.	24.	(22970)	21.
MIDLAND	0.	0.	73.	8.	(64082)	19.
MISSAUKEE	0.	0.	96.	3.	(7406)	1.
MONROE	0.	0.	68.	19.	(115052)	13.
MONTCALM	0.	21.	39.	25.	(40568)	15.
MONTMORENCY	0.	0.	91.	6.	(4825)	3.
MUSKEGCN	0.	0.	77.	9.	(155527)	14.
NEWAYGC	0.	8.	62.	21.	(27107)	9.
OAKLANC	0.	0.	79.	6.	(893109)	15.
OCEANA	0.	2.	84.	10.	(18336)	4.
OGEMAW	0.	23.	65.	12.	(13529)	0.
ONTCNAGON	0.	2.	41.	20.	(10548)	37.
OSCEOLA	0.	0.	77.	12.	(16453)	11.
OSCODA	0.	0.	100.	0.	(5401)	0.
OTSEGO	0.	0.	78.	4.	(10668)	18.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MICHIGAN						
OTTAWA	0.	0.	68.	16.	(127107)	16.
PRESQUE ISLE	0.	0.	89.	2.	(13444)	9.
ROSCOMMON	0.	0.	95.	4.	(9714)	1.
SAGINAW	0.	0.	88.	5.	(207618)	7.
SANILAC	0.	0.	97.	3.	(33287)	0.
SCHOOLCRAFT	0.	0.	66.	23.	(8361)	11.
SHIAWASSEE	0.	0.	84.	10.	(62242)	6.
ST CLAIR	0.	0.	92.	1.	(117601)	7.
ST JOSEPH	0.	0.	69.	20.	(47599)	11.
TUSCOLA	0.	1.	80.	12.	(47553)	7.
VAN BUREN	0.	2.	82.	8.	(54761)	8.
WASHTENAW	0.	1.	69.	6.	(237438)	24.
WAYNE	0.	0.	77.	5.	(2670587)	18.
WEXFORD	0.	0.	59.	19.	(18968)	22.
MINNESOTA						
AITKIN	0.	0.	81.	14.	(14751)	5.
ANOKA	0.	0.	73.	21.	(154617)	6.
BECKER	0.	0.	62.	25.	(23990)	13.
BELTRAMI	0.	0.	33.	18.	(23837)	49.
BENTON	0.	5.	40.	50.	(23991)	5.
BIG STONE	0.	0.	66.	26.	(8044)	8.
BLUE EARTH	0.	1.	17.	34.	(47248)	48.
BROWN	0.	0.	26.	19.	(30515)	55.
CARLTON	0.	0.	33.	64.	(30160)	3.
CARVER	0.	17.	28.	55.	(24173)	0.
CASS	0.	1.	66.	26.	(16949)	7.
CHIPPEWA	0.	0.	30.	47.	(13813)	23.
CHISAGO	0.	0.	76.	9.	(16673)	15.
CLAY	0.	0.	29.	65.	(47050)	6.
CLEARWATER	0.	0.	83.	17.	(11134)	0.
COOK	0.	0.	88.	1.	(2945)	11.
COTTONWOOD	0.	0.	32.	35.	(14913)	33.
CROW WING	0.	0.	44.	20.	(33426)	36.
DAKOTA	0.	1.	48.	28.	(112733)	23.
DODGE	0.	0.	61.	29.	(13037)	10.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MINNESOTA						
DOUGLAS	0.	0.	48.	32.	(24365)	20.
FARIBAULT	0.	0.	34.	34.	(20185)	32.
FILLMORE	0.	0.	33.	24.	(21916)	43.
FREEBORN	0.	0.	54.	7.	(38577)	39.
GOODHUE	0.	0.	43.	18.	(35409)	39.
GRANT	0.	0.	55.	38.	(8065)	7.
HENNEPIN	0.	1.	55.	39.	(966165)	5.
HOUSTON	0.	2.	61.	34.	(17886)	3.
HUBBARD	0.	8.	43.	27.	(9973)	22.
ISANTI	0.	0.	55.	29.	(15485)	16.
ITASCA	0.	0.	38.	21.	(33479)	41.
JACKSON	0.	0.	38.	34.	(14313)	28.
KANABEC	0.	0.	83.	11.	(10861)	6.
KANDIYOHI	0.	0.	39.	32.	(32206)	29.
KITTSON	0.	0.	69.	16.	(6813)	15.
KOOCHICHING	0.	0.	31.	2.	(17595)	67.
LAC QUI PARLE	0.	0.	80.	13.	(11158)	7.
LAKE	0.	3.	35.	14.	(14726)	48.
LAKE OF THE WOODS	0.	0.	94.	3.	(4637)	3.
LE SUEUR	0.	1.	62.	32.	(24160)	5.
LINCOLN	0.	0.	57.	21.	(7784)	22.
LYON	0.	0.	34.	31.	(25253)	35.
MAHNOMEN	0.	0.	90.	9.	(4999)	1.
MARSHALL	0.	0.	86.	10.	(12649)	4.
MARTIN	0.	2.	23.	19.	(24088)	56.
MCLEOD	0.	0.	57.	31.	(27662)	12.
MEEKER	0.	0.	52.	22.	(12462)	26.
MILLE LACS	0.	0.	54.	24.	(18077)	22.
MORRISON	0.	0.	58.	25.	(26830)	17.
MOWER	0.	0.	46.	10.	(43801)	44.
MURRAY	0.	0.	67.	22.	(12308)	11.
NICOLLET	0.	0.	40.	23.	(30385)	37.
NOBLES	0.	0.	40.	42.	(23070)	18.
NORMAN	0.	0.	86.	11.	(10023)	3.
OLMSTED	0.	6.	37.	20.	(83717)	37.
OTTER TAIL	0.	0.	54.	10.	(45209)	36.
PENNINGTON	0.	0.	52.	27.	(13745)	21.
PINE	0.	0.	59.	23.	(19083)	18.
PIPESTONE	0.	0.	49.	16.	(13125)	35.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MINNESOTA						
POLK	0.	0.	53.	25.	(34296)	22.
POPE	0.	0.	44.	31.	(10530)	25.
RAMSEY	0.	0.	56.	15.	(473042)	29.
RED LAKE	0.	0.	79.	21.	(5512)	0.
REDWOOD	0.	0.	41.	35.	(20725)	24.
RENVILLE	0.	2.	61.	26.	(22097)	11.
RICE	0.	0.	29.	67.	(42248)	4.
ROCK	0.	0.	40.	32.	(11012)	28.
ROSEAU	0.	0.	81.	18.	(11303)	1.
SCOTT	0.	13.	29.	57.	(29255)	1.
SHERBURNE	0.	10.	13.	58.	(25572)	19.
SIBLEY	0.	0.	53.	18.	(13771)	29.
ST LOUIS	0.	0.	50.	25.	(216294)	25.
STEARNS	0.	2.	31.	23.	(84314)	44.
STEELE	0.	2.	23.	25.	(24765)	50.
STEVENS	0.	3.	25.	29.	(10823)	43.
SWIFT	0.	0.	50.	39.	(13928)	11.
TODD	0.	0.	48.	38.	(22694)	14.
TRAVERSE	0.	0.	67.	16.	(5766)	17.
WABASHA	0.	0.	42.	24.	(16957)	34.
WADENA	0.	0.	34.	46.	(11833)	20.
WASECA	0.	0.	69.	12.	(16663)	19.
WASHINGTON	0.	0.	74.	1.	(1715)	25.
WATONWAN	0.	0.	43.	45.	(13161)	12.
WILKIN	0.	0.	39.	48.	(9022)	13.
WINONA	0.	1.	15.	8.	(44155)	76.
WRIGHT	0.	4.	43.	47.	(40242)	6.
YELLOW MEDICINE	0.	0.	37.	35.	(14472)	28.
OHIO						
ADAMS	0.	22.	63.	15.	(19723)	0.
ALLEN	0.	2.	65.	30.	(103173)	3.
ASHLAND	0.	0.	61.	25.	(43506)	14.
ASHTABULA	0.	0.	87.	6.	(98237)	7.
ATHENS	0.	1.	56.	2.	(55038)	41.
AUGLAIZE	0.	15.	39.	44.	(40552)	2.

TABLE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
OHIO						
BELMONT	0.	5.	76.	8.	(82969)	11.
BROWN	0.	16.	70.	14.	(23723)	0.
BUTLER	0.	9.	49.	37.	(210733)	5.
CARROLL	0.	0.	93.	5.	(18090)	2.
CHAMPAIGN	0.	5.	37.	50.	(29592)	8.
CLARK	0.	5.	71.	14.	(156076)	10.
CLERMONT	0.	3.	89.	4.	(80221)	4.
CLINTON	0.	6.	32.	53.	(29973)	9.
COLUMBIANA	0.	1.	64.	16.	(105831)	19.
COSHOCTON	0.	9.	61.	18.	(30548)	12.
CRAWFORD	0.	0.	65.	23.	(50055)	12.
CUYAHOGA	0.	0.	81.	5.	(1727582)	14.
DARKE	0.	13.	57.	23.	(52271)	7.
DEFIANCE	0.	11.	52.	19.	(38038)	18.
DELAWARE	0.	6.	21.	57.	(39724)	16.
ERIE	0.	0.	55.	19.	(75370)	26.
FAIRFIELD	0.	18.	40.	25.	(74798)	17.
FAYETTE	0.	9.	35.	47.	(25755)	9.
FRANKLIN	0.	0.	69.	22.	(825001)	9.
FULTON	0.	0.	91.	8.	(30144)	1.
GALLIA	0.	0.	65.	10.	(22912)	25.
GEAUGA	0.	6.	80.	12.	(47974)	2.
GREENE	0.	2.	29.	59.	(103014)	10.
GUERNSEY	0.	0.	72.	14.	(34929)	14.
HAMILTON	0.	0.	86.	3.	(937358)	11.
HANCOCK	0.	8.	38.	37.	(57129)	17.
HARDIN	0.	2.	46.	27.	(28827)	25.
HARRISON	0.	3.	79.	9.	(14688)	9.
HENRY	0.	13.	42.	26.	(27102)	19.
HIGHLAND	0.	1.	94.	4.	(30671)	1.
HOCKING	0.	0.	83.	10.	(20367)	7.
HOLMES	0.	7.	58.	32.	(21053)	3.
HURON	0.	0.	92.	3.	(48401)	5.
JACKSON	0.	0.	97.	2.	(28307)	1.
JEFFERSON	0.	1.	84.	4.	(97107)	11.
KNOX	0.	2.	32.	53.	(44025)	13.
LAKE	0.	0.	88.	7.	(190768)	5.
LAWRENCE	0.	1.	86.	13.	(57239)	0.
LICKING	0.	22.	40.	27.	(107464)	11.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION.

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
OHIO						
LOGAN	0.	14.	52.	24.	(35325)	10.
LORAIN	0.	0.	87.	3.	(237850)	10.
LUCAS	0.	0.	80.	8.	(483222)	12.
MADISON	0.	42.	24.	28.	(23409)	6.
MAHONING	0.	0.	85.	4.	(302987)	11.
MARICN	0.	0.	77.	8.	(65600)	15.
MEDINA	0.	0.	92.	4.	(78256)	4.
MEIGS	0.	0.	96.	2.	(20733)	2.
MERCER	0.	18.	34.	26.	(34942)	22.
MIAMI	0.	13.	52.	25.	(78951)	10.
MONRCE	0.	0.	84.	10.	(14824)	6.
MCNTGOMERY	0.	0.	79.	14.	(610796)	7.
MORGAN	0.	0.	69.	5.	(13326)	26.
MORROW	0.	17.	55.	17.	(20799)	11.
MUSKINGUM	0.	0.	69.	15.	(71491)	16.
NOBLE	0.	6.	60.	22.	(11143)	12.
OTTAWA	0.	0.	78.	11.	(36592)	11.
PAULDING	0.	10.	62.	15.	(18396)	13.
PERRY	0.	0.	92.	5.	(26859)	3.
PICKAWAY	0.	34.	15.	40.	(34795)	11.
PIKE	0.	11.	69.	20.	(17366)	0.
PORTAGE	0.	0.	92.	2.	(116162)	6.
PREBLE	0.	16.	44.	16.	(34586)	24.
PUTNAM	0.	20.	55.	25.	(31322)	0.
RICHLAND	0.	0.	90.	6.	(123913)	4.
ROSS	0.	7.	28.	63.	(62054)	2.
SANDUSKY	0.	1.	57.	30.	(66053)	12.
SCIOTO	0.	0.	83.	2.	(77333)	15.
SENECA	0.	0.	80.	12.	(61283)	8.
SHELBY	0.	5.	37.	34.	(35231)	24.
STARK	0.	0.	90.	4.	(345577)	6.
SUMMIT	0.	0.	88.	4.	(549749)	8.
TRUMBULL	0.	0.	81.	7.	(222907)	12.
TUSCARAWAS	0.	4.	64.	17.	(80178)	15.
UNION	0.	16.	41.	25.	(25021)	18.
VAN WERT	0.	25.	16.	50.	(28922)	9.
VINTON	0.	0.	95.	3.	(7705)	2.
WARREN	0.	14.	75.	7.	(78796)	4.
WASHINGTON	0.	9.	46.	32.	(57298)	13.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
OHIO						
WAYNE	0.	0.	73.	14.	(86207)	13.
WILLIAMS	0.	0.	95.	4.	(33669)	1.
WOOD	0.	3.	42.	21.	(78120)	34.
WYANDOT	0.	0.	79.	13.	(23361)	8.
WISCONSIN						
ADAMS	0.	0.	85.	6.	(8561)	9.
ASHLAND	0.	0.	37.	38.	(16955)	25.
BARRON	0.	0.	53.	23.	(34473)	24.
BAYFIELD	0.	0.	87.	7.	(9688)	6.
BROWN	0.	0.	44.	31.	(152784)	25.
BUFFALO	0.	0.	86.	8.	(14056)	6.
BURNETT	0.	0.	74.	14.	(8680)	12.
CALUMET	0.	0.	49.	19.	(19806)	32.
CHIPPEWA	0.	0.	54.	18.	(47111)	28.
CLARK	0.	0.	80.	15.	(30125)	5.
COLUMBIA	0.	0.	58.	14.	(36202)	28.
CRAWFORD	0.	0.	45.	34.	(15138)	21.
DANE	0.	0.	56.	23.	(267485)	21.
DODGE	0.	0.	67.	17.	(79939)	16.
DOOR	0.	0.	55.	28.	(20106)	17.
DOUGLAS	0.	2.	53.	15.	(44657)	30.
DUNN	0.	0.	44.	3.	(27796)	53.
EAU CLAIRE	0.	0.	59.	13.	(71870)	28.
FLORENCE	0.	0.	47.	13.	(2188)	40.
FOND DU LAC	0.	0.	59.	17.	(83321)	24.
FOREST	0.	0.	55.	31.	(7471)	14.
GRANT	0.	0.	50.	11.	(45696)	39.
GREEN	0.	0.	38.	33.	(26275)	29.
GREEN LAKE	0.	0.	52.	26.	(17721)	22.
IOWA	0.	4.	76.	14.	(22522)	6.
IRON	0.	0.	71.	8.	(6773)	21.
JACKSON	0.	0.	77.	12.	(15424)	11.
JEFFERSON	0.	0.	53.	24.	(44101)	23.
JUNEAU	0.	8.	59.	23.	(19072)	10.
KENOSHA	0.	0.	75.	8.	(114392)	17.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
WISCONSIN						
KEWAUNEE	0.	0.	50.	26.	(18961)	24.
LA CROSSE	0.	0.	56.	10.	(81064)	34.
LAFAYETTE	0.	0.	59.	16.	(18732)	25.
LANGLADE	0.	0.	56.	26.	(19955)	18.
LINCOLN	0.	6.	50.	25.	(23326)	19.
MANITOWOC	0.	0.	61.	23.	(81182)	16.
MARATHON	0.	1.	56.	17.	(97584)	26.
MARINETTE	0.	0.	54.	19.	(37189)	27.
MARQUETTE	0.	0.	60.	29.	(8263)	11.
MILWAUKEE	0.	0.	63.	10.	(1063719)	27.
MONROE	0.	0.	35.	23.	(32118)	42.
OCONTO	0.	0.	74.	10.	(25090)	16.
ONEIDA	0.	0.	40.	36.	(22837)	24.
OUTAGAMIE	0.	2.	58.	19.	(124908)	21.
OZAUKEE	0.	0.	72.	14.	(47395)	14.
PEPIN	0.	0.	70.	22.	(6999)	8.
PIERCE	0.	0.	47.	15.	(26666)	38.
POLK	0.	0.	75.	15.	(27503)	10.
PORTAGE	0.	0.	42.	8.	(46575)	50.
PRICE	0.	0.	36.	47.	(16259)	17.
RACINE	0.	0.	71.	10.	(158296)	19.
RICHLAND	0.	0.	48.	21.	(16942)	31.
ROCK	0.	0.	57.	20.	(132432)	23.
RUSK	0.	0.	51.	7.	(13548)	42.
SAUK	0.	4.	43.	29.	(38817)	24.
SAWYER	0.	19.	76.	3.	(9824)	2.
SHAWANO	0.	0.	72.	16.	(37087)	12.
SHEBOYGAN	0.	0.	61.	15.	(96660)	24.
ST CROIX	0.	1.	62.	18.	(33718)	19.
TAYLOR	0.	0.	76.	21.	(17680)	3.
TREMPEALEAU	0.	0.	69.	16.	(20552)	15.
VERNON	0.	0.	69.	16.	(23648)	15.
VILAS	0.	0.	47.	26.	(11031)	27.
WALWORTH	0.	0.	61.	8.	(65554)	31.
WASHBURN	0.	0.	51.	31.	(11751)	18.
WASHINGTON	0.	0.	61.	25.	(61782)	14.
WAUKESHA	0.	0.	69.	16.	(222192)	15.
WAUPACA	0.	0.	54.	22.	(42288)	24.
WAUSHARA	0.	0.	91.	7.	(13238)	2.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 4

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
WISCONSIN						
WINNEBAGO	0.	0.	58.	19.	(115162)	23.
WOOD	0.	0.	29.	29.	(66696)	42.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ARKANSAS						
ARKANSAS	20.	13.	32.	20.	(22681)	15.
ASHLEY	48.	27.	23.	2.	(24185)	0.
BAXTER	0.	4.	82.	2.	(15541)	12.
BENTON	0.	29.	35.	34.	(48410)	2.
BOONE	0.	9.	62.	6.	(17687)	23.
BRADLEY	72.	2.	25.	0.	(13155)	1.
CALHOUN	64.	11.	16.	0.	(3234)	9.
CARROLL	0.	9.	61.	0.	(12059)	30.
CHICOT	64.	2.	31.	2.	(19035)	1.
CLARK	23.	0.	20.	15.	(23261)	42.
CLAY	14.	1.	82.	2.	(18433)	1.
CLEBURNE	0.	5.	56.	4.	(9357)	35.
CLEVELAND	59.	7.	33.	1.	(5780)	0.
COLUMBIA	42.	0.	37.	15.	(26351)	6.
CONWAY	4.	0.	70.	7.	(16079)	19.
CRAIGHEAD	29.	0.	70.	0.	(53476)	1.
CRAWFORD	5.	0.	91.	1.	(26356)	3.
CRITTENDEN	70.	0.	28.	0.	(48034)	2.
CROSS	34.	4.	47.	8.	(19298)	7.
DALLAS	37.	20.	32.	6.	(10813)	5.
DESHA	55.	2.	36.	5.	(18791)	2.
DREW	18.	6.	30.	30.	(13821)	16.
FAULKNER	16.	0.	62.	6.	(30648)	16.
FRANKLIN	12.	2.	61.	5.	(10738)	20.
FULTON	0.	0.	99.	0.	(7543)	1.
GARLAND	0.	8.	52.	21.	(54141)	19.
GRANT	58.	0.	42.	0.	(10202)	0.
GREENE	11.	12.	65.	6.	(25118)	6.
HEMPSTEAD	54.	7.	35.	2.	(18443)	2.
HOT SPRING	15.	29.	45.	6.	(19824)	5.
HOWARD	37.	4.	54.	3.	(12770)	2.
INDEPENDENCE	14.	11.	52.	10.	(21549)	13.
IZARD	0.	0.	69.	3.	(7592)	28.
JACKSON	40.	6.	49.	3.	(22391)	2.
JEFFERSON	31.	9.	35.	16.	(86679)	9.
JOHNSON	4.	4.	73.	8.	(14104)	11.
LAFAYETTE	45.	10.	42.	1.	(10733)	2.
LAWRENCE	28.	4.	64.	4.	(16186)	0.
LEE	43.	4.	47.	3.	(16037)	3.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ARKANSAS						
LINCOLN	67.	0.	32.	0.	(12793)	1.
LITTLE RIVER	73.	0.	25.	0.	(11194)	2.
LOGAN	6.	1.	54.	26.	(16224)	13.
LONCKE	59.	1.	37.	1.	(25722)	2.
MADISON	7.	0.	73.	3.	(9155)	17.
MARION	0.	2.	61.	1.	(8097)	36.
MILLER	39.	0.	52.	4.	(33064)	5.
MISSISSIPPI	75.	3.	20.	1.	(62060)	1.
MCNROE	52.	13.	28.	2.	(15527)	5.
MONTGOMERY	2.	0.	97.	1.	(7151)	0.
NEVADA	68.	3.	27.	2.	(9284)	0.
NEWTON	0.	0.	83.	0.	(5844)	17.
OUACHITA	23.	12.	45.	16.	(32318)	4.
PERRY	0.	0.	100.	0.	(5354)	0.
PHILLIPS	39.	1.	41.	9.	(40753)	10.
PIKE	16.	3.	74.	0.	(7499)	7.
POINSETT	55.	4.	36.	2.	(26952)	3.
POLK	2.	14.	80.	2.	(13297)	2.
POPE	14.	8.	61.	6.	(32557)	11.
PRAIRIE	31.	15.	38.	9.	(10873)	7.
PULASKI	15.	2.	67.	13.	(291201)	3.
RANDOLPH	3.	3.	89.	4.	(12334)	1.
SALINE	2.	22.	46.	28.	(33024)	2.
SCOTT	31.	1.	60.	7.	(7252)	1.
SEARCY	4.	2.	70.	11.	(8044)	13.
SEBASTIAN	13.	0.	77.	1.	(79828)	9.
SEVIER	21.	0.	76.	2.	(11212)	1.
SHARP	0.	0.	96.	1.	(8777)	3.
ST FRANCIS	32.	8.	49.	3.	(31204)	8.
STONE	0.	0.	31.	0.	(6604)	69.
UNION	25.	14.	33.	18.	(45896)	10.
VAN BUREN	11.	4.	79.	2.	(8530)	4.
WASHINGTON	1.	0.	57.	1.	(80202)	41.
WHITE	37.	0.	53.	4.	(38789)	6.
WOODRUFF	50.	3.	47.	0.	(12297)	0.
YELL	25.	2.	69.	0.	(10776)	4.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
LOUISIANA						
ACADIA	66.	0.	30.	2.	(51303)	2.
ALLEN	57.	0.	31.	11.	(22983)	1.
ASCENSION	65.	9.	20.	4.	(42839)	2.
ASSUMPTION	74.	0.	26.	0.	(18308)	0.
AVOYELLES	61.	3.	30.	4.	(39486)	2.
BEAUREGARD	33.	24.	38.	5.	(21176)	0.
BIENVILLE	46.	9.	41.	3.	(15521)	1.
BOSSIER	50.	9.	24.	7.	(64282)	10.
CADDO	41.	1.	43.	7.	(228031)	8.
CALCASIEU	75.	0.	22.	1.	(147128)	2.
CALDWELL	63.	1.	31.	5.	(9536)	0.
CAMERON	51.	6.	32.	5.	(8194)	6.
CATAHOULA	56.	1.	38.	5.	(12019)	0.
CLAIBORNE	27.	13.	39.	16.	(16865)	5.
CONCORDIA	67.	2.	30.	1.	(21837)	0.
DE SOTC	45.	7.	42.	4.	(22764)	2.
EAST BATON ROU	59.	0.	30.	5.	(281839)	6.
EAST CARROLL	63.	6.	28.	3.	(12884)	0.
EAST FELICIANA	31.	0.	27.	38.	(16574)	4.
EVANGELINE	72.	0.	27.	0.	(31964)	1.
FRANKLIN	80.	1.	18.	1.	(25463)	0.
GRANT	71.	5.	24.	0.	(13624)	0.
IBERIA	76.	0.	20.	2.	(57881)	2.
IBERVILLE	53.	3.	23.	15.	(31161)	6.
JACKSON	47.	4.	23.	24.	(17414)	2.
JEFFERSON	74.	0.	24.	0.	(343012)	2.
JEFFERSON DAVI	77.	0.	20.	1.	(30103)	2.
LA SALLE	67.	6.	26.	1.	(14079)	0.
LAFAYETTE	66.	0.	27.	4.	(110052)	3.
LAFOURCHE	46.	22.	25.	6.	(79141)	1.
LINCOLN	22.	0.	36.	37.	(33800)	5.
LIVINGSTON	73.	3.	24.	0.	(37558)	0.
MADISON	66.	7.	25.	0.	(14606)	2.
MOREHOUSE	40.	7.	20.	14.	(32480)	19.
NATCHITOCHES	31.	0.	41.	25.	(35726)	3.
ORLEANS	22.	0.	71.	2.	(608015)	5.
OUACHITA	52.	1.	32.	7.	(115370)	8.
PLAQUEMINES	60.	0.	17.	12.	(19478)	11.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
LOUISIANA						
PCINTE COUPEE	54.	2.	39.	5.	(26071)	0.
RAPIDES	41.	9.	28.	16.	(116009)	6.
RED RIVER	65.	11.	23.	0.	(8860)	1.
RICHLAND	49.	1.	34.	12.	(20627)	4.
SABINE	41.	9.	46.	2.	(18638)	2.
ST BERNARD	67.	3.	28.	1.	(26018)	1.
ST CHARLES	49.	5.	19.	3.	(29775)	24.
ST HELENA	56.	5.	32.	7.	(7667)	0.
ST JAMES	73.	8.	15.	4.	(17180)	0.
ST JOHN THE BA	62.	7.	22.	3.	(25250)	6.
ST LANCRY	70.	0.	26.	2.	(76053)	2.
ST MARTIN	79.	3.	18.	0.	(31494)	0.
ST MARY	70.	2.	16.	7.	(60268)	5.
ST TAMMANY	57.	0.	41.	0.	(63348)	2.
TANGIPAHOA	32.	22.	41.	4.	(66636)	1.
TENSAS	71.	0.	29.	0.	(9732)	0.
TERREBCNNE	52.	5.	34.	5.	(66695)	4.
UNION	66.	1.	32.	0.	(18606)	1.
VERMILION	44.	18.	33.	3.	(42227)	2.
VERNON	80.	2.	16.	1.	(54219)	1.
WASHINGTON	29.	18.	30.	23.	(42224)	0.
WEBSTER	33.	8.	48.	9.	(42273)	2.
WEST BATON ROU	83.	0.	16.	0.	(15964)	1.
WEST CARROLL	55.	11.	33.	1.	(13674)	0.
WEST FELICIANA	16.	1.	44.	35.	(12151)	4.
WINN	25.	36.	27.	3.	(13325)	9.
NEW MEXICO						
BERNALILLO	22.	0.	57.	7.	(315046)	14.
CATRON	0.	8.	92.	0.	(1799)	0.
CHAVES	7.	3.	53.	14.	(43335)	23.
COLFAX	0.	10.	21.	43.	(11697)	26.
CURRY	0.	3.	84.	3.	(40431)	10.
DE BACA	0.	14.	71.	4.	(2547)	11.
DONA ANA	23.	3.	46.	8.	(70086)	20.
EDDY	1.	23.	37.	26.	(41119)	13.

TABLE 9.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NEW MEXICO						
GRANT	1.	0.	67.	20.	(22181)	12.
GUADALUPE	0.	9.	75.	6.	(4969)	10.
HARDING	0.	0.	33.	0.	(882)	67.
HIDALGO	0.	21.	61.	9.	(4583)	9.
LEA	18.	15.	52.	7.	(50881)	8.
LINCOLN	0.	7.	67.	12.	(7560)	14.
LOS ALAMOS	0.	0.	82.	0.	(15227)	18.
LUNA	0.	22.	38.	12.	(11706)	28.
MCKINLEY	12.	0.	47.	7.	(44829)	34.
MORA	11.	0.	84.	5.	(4673)	0.
OTERO	35.	6.	48.	5.	(41097)	6.
QUAY	0.	13.	75.	2.	(10799)	10.
RIO ARRIBA	6.	2.	84.	2.	(26915)	6.
ROOSEVELT	0.	0.	36.	19.	(14808)	45.
SAN JUAN	23.	6.	50.	7.	(51685)	14.
SAN MIGUEL	0.	6.	47.	11.	(21951)	36.
SANDOVAL	34.	2.	60.	2.	(17240)	2.
SANTA FE	0.	2.	25.	18.	(50251)	55.
SIERRA	0.	18.	47.	18.	(6876)	17.
SOCORRO	8.	24.	27.	19.	(9763)	22.
TAOS	9.	7.	63.	5.	(19055)	16.
TORRANCE	0.	6.	86.	5.	(5290)	3.
UNION	0.	3.	86.	9.	(4925)	2.
VALENCIA	48.	0.	49.	2.	(40121)	1.
OKLAHOMA						
ADAIR	13.	8.	75.	2.	(15141)	2.
ALFALFA	0.	0.	26.	31.	(7744)	43.
ATOKA	7.	18.	70.	3.	(10972)	2.
BEAVER	0.	0.	42.	36.	(5406)	22.
BECKHAM	0.	12.	65.	18.	(16384)	5.
BLAINE	0.	10.	54.	11.	(12329)	25.
BRYAN	22.	0.	29.	23.	(25596)	26.
CADDO	0.	26.	57.	9.	(29634)	8.
CANADIAN	0.	6.	52.	18.	(27769)	24.
CARTER	13.	1.	36.	34.	(37360)	16.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
OKLAHOMA						
CHEROKEE	6.	0.	41.	1.	(23174)	52.
CHOCTAW	25.	12.	40.	16.	(15798)	7.
CIMARRON	0.	29.	40.	9.	(4145)	22.
CLEVELAND	14.	5.	35.	5.	(77416)	41.
COAL	27.	0.	68.	5.	(5920)	0.
COMANCHE	19.	1.	39.	6.	(105196)	35.
COTTON	3.	23.	62.	5.	(6832)	7.
CRAIG	0.	0.	81.	18.	(13395)	1.
CREEK	6.	7.	67.	11.	(45297)	9.
CUSTER	0.	4.	63.	14.	(23694)	19.
DELAWARE	13.	14.	69.	2.	(17026)	2.
DEWEY	0.	16.	62.	2.	(4540)	20.
ELLIS	0.	17.	52.	11.	(4958)	20.
GARFIELD	0.	0.	59.	12.	(56253)	29.
GARVIN	5.	10.	63.	12.	(27035)	10.
GRADY	0.	0.	65.	22.	(29107)	13.
GRANT	0.	7.	31.	43.	(6823)	19.
GREER	0.	13.	34.	12.	(7979)	41.
HARMON	0.	4.	61.	16.	(5136)	19.
HARPER	0.	7.	65.	15.	(5060)	13.
HASKELL	23.	20.	44.	8.	(9578)	5.
HUGHES	12.	4.	61.	12.	(14622)	11.
JACKSON	19.	1.	61.	14.	(30902)	5.
JEFFERSON	16.	2.	65.	12.	(8205)	5.
JOHNSTON	12.	0.	67.	16.	(7475)	5.
KAY	0.	0.	23.	48.	(49022)	29.
KINGFISHER	0.	10.	61.	15.	(12917)	14.
KIOWA	0.	7.	63.	15.	(14356)	15.
LATIMER	0.	0.	9.	44.	(8772)	47.
LE FLORE	25.	9.	46.	4.	(31136)	16.
LINCOLN	0.	18.	75.	3.	(20087)	4.
LOGAN	0.	5.	30.	4.	(19766)	61.
LOVE	13.	30.	44.	12.	(5626)	1.
MAJOR	0.	25.	62.	10.	(7529)	3.
MARSHALL	5.	7.	59.	14.	(7638)	15.
MAYES	0.	13.	46.	18.	(25509)	23.
MCCLAIN	0.	16.	60.	19.	(14109)	5.
MCCURTAIN	48.	3.	39.	2.	(27496)	8.
MCINTOSH	11.	14.	52.	4.	(13124)	19.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
OKLAHOMA						
MURRAY	0.	6.	37.	43.	(10707)	14.
MUSKOGEE	2.	10.	43.	40.	(59744)	5.
NOBLE	0.	47.	35.	15.	(9386)	3.
NOWATA	2.	12.	64.	10.	(10190)	12.
OKFUSKEE	1.	5.	66.	19.	(10769)	9.
OKLAHOMA	30.	0.	53.	8.	(524349)	9.
OKMULGEE	1.	19.	52.	20.	(34480)	8.
OSAGE	0.	34.	35.	24.	(23692)	7.
OTTAWA	8.	12.	24.	25.	(29800)	31.
PAWNEE	0.	7.	76.	9.	(11508)	8.
PAYNE	0.	3.	38.	6.	(50555)	53.
PITTSBURG	2.	7.	33.	20.	(37316)	38.
PONTOTOC	7.	2.	46.	26.	(26649)	19.
POTTAWATOMIE	1.	6.	27.	23.	(42108)	43.
PUSHMATAHA	16.	30.	51.	1.	(8542)	2.
ROGER MILLS	0.	21.	78.	0.	(4287)	1.
ROGERS	18.	21.	52.	7.	(27824)	2.
SEMINOLE	0.	15.	68.	10.	(25152)	7.
SEQUOYAH	26.	11.	49.	2.	(25220)	12.
STEPHENS	7.	14.	47.	10.	(35902)	22.
TEXAS	0.	12.	30.	33.	(17228)	25.
TILLMAN	0.	10.	65.	17.	(13203)	8.
TULSA	24.	1.	59.	15.	(403751)	1.
WAGONER	4.	5.	81.	4.	(18511)	6.
WASHINGTON	0.	5.	50.	13.	(42564)	32.
WASHITA	0.	20.	59.	12.	(11673)	9.
WOODS	0.	0.	29.	25.	(11992)	46.
WOODWARD	0.	8.	43.	34.	(15501)	15.
TEXAS						
ANDERSON	29.	20.	35.	14.	(27789)	2.
ANDREWS	33.	5.	44.	10.	(10372)	8.
ANGELINA	40.	15.	36.	8.	(49349)	1.
ARANSAS	62.	0.	38.	0.	(7718)	0.
ARCHER	7.	62.	6.	25.	(4406)	0.
ARMSTRONG	0.	14.	42.	22.	(1895)	22.

TABLE 8.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
ATASCOSA	62.	1.	26.	7.	(17425)	4.
AUSTIN	40.	3.	49.	1.	(13831)	7.
BAILEY	2.	5.	86.	3.	(9243)	4.
BANDERA	0.	9.	73.	1.	(4609)	17.
BASTROP	46.	0.	43.	2.	(17614)	9.
BAYLOR	3.	15.	67.	15.	(5221)	0.
BEE	71.	1.	24.	3.	(22737)	1.
BELL	55.	3.	29.	5.	(135680)	8.
BEXAR	57.	0.	28.	5.	(816279)	10.
BLANCO	0.	14.	68.	18.	(3567)	0.
BORDEN	42.	0.	56.	2.	(888)	0.
BOSQUE	10.	5.	66.	3.	(11100)	16.
BOWIE	41.	3.	42.	12.	(67813)	2.
BRAZORIA	59.	5.	30.	4.	(99025)	2.
BRAZOS	50.	3.	15.	32.	(58531)	0.
BREWSTER	0.	0.	16.	46.	(7769)	38.
BRISCOE	0.	0.	95.	0.	(1884)	5.
BROOKS	82.	0.	18.	0.	(8005)	0.
BROWN	14.	0.	46.	26.	(25877)	14.
BURLESON	62.	1.	27.	10.	(9446)	0.
BURNET	8.	1.	60.	4.	(11279)	27.
CALDWELL	40.	2.	45.	11.	(21178)	2.
CALHOUN	15.	30.	45.	6.	(17729)	4.
CALLAHAN	40.	6.	34.	20.	(8205)	0.
CAMERON	66.	0.	29.	2.	(139261)	3.
CAMP	56.	0.	42.	2.	(7136)	0.
CARSON	0.	0.	18.	7.	(6303)	75.
CASS	53.	2.	42.	1.	(24133)	2.
CASTRO	0.	10.	54.	4.	(8487)	32.
CHAMBERS	68.	0.	32.	0.	(13154)	0.
CHEROKEE	28.	9.	45.	10.	(32549)	8.
CHILDRESS	0.	9.	65.	23.	(6605)	3.
CLAY	32.	0.	68.	0.	(7419)	0.
COCHRAN	19.	0.	80.	0.	(5326)	1.
COKE	27.	0.	72.	0.	(3074)	1.
COLEMAN	30.	0.	62.	5.	(10288)	3.
COLLIN	34.	10.	35.	10.	(68494)	11.
COLLINGSWORTH	1.	22.	43.	26.	(4755)	8.
COLORADO	50.	2.	46.	1.	(17638)	1.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
COMAL	0.	29.	42.	27.	(23020)	2.
COMANCHE	15.	29.	46.	9.	(11898)	1.
CONCHO	36.	0.	64.	0.	(2937)	0.
COOKE	4.	12.	68.	5.	(23471)	11.
CORYELL	12.	5.	44.	33.	(26261)	6.
COTTLE	0.	30.	63.	7.	(3204)	0.
CRANE	58.	12.	29.	0.	(4672)	1.
CROCKETT	0.	0.	100.	0.	(4077)	0.
CROSBY	0.	20.	59.	5.	(8709)	16.
CULBERSON	73.	0.	27.	0.	(2733)	0.
DALLAM	0.	12.	68.	7.	(7667)	13.
DALLAS	53.	0.	31.	4.	(1312547)	12.
DAWSON	36.	10.	46.	7.	(16233)	1.
DE WITT	24.	6.	55.	10.	(16204)	5.
DEAF SMITH	0.	23.	44.	13.	(17940)	20.
DELTA	58.	0.	27.	0.	(4927)	15.
DENTON	29.	0.	17.	14.	(71087)	40.
DICKENS	0.	1.	96.	3.	(3737)	0.
DIMMIT	40.	19.	38.	3.	(9039)	0.
DONLEY	0.	49.	25.	14.	(2860)	12.
DUVAL	77.	3.	17.	3.	(11542)	0.
EASTLAND	10.	18.	38.	20.	(18930)	14.
ECTOR	58.	0.	25.	5.	(91805)	12.
EDWARDS	29.	8.	30.	1.	(2483)	32.
EL PASO	43.	0.	45.	3.	(356711)	9.
ELLIS	40.	19.	27.	6.	(47055)	8.
ERATH	13.	0.	59.	27.	(17094)	1.
FALLS	35.	0.	33.	27.	(17300)	5.
FANNIN	55.	0.	38.	1.	(22705)	6.
FAYETTE	26.	9.	61.	3.	(18222)	1.
FISHER	0.	22.	68.	8.	(6078)	2.
FLOYD	0.	37.	34.	28.	(10460)	1.
FOARD	0.	21.	55.	24.	(2211)	0.
FORT BEND	71.	1.	25.	3.	(47454)	0.
FRANKLIN	45.	0.	47.	1.	(5453)	7.
FREESTONE	55.	8.	37.	0.	(11131)	0.
FRIO	78.	1.	21.	0.	(11646)	0.
GAINES	28.	16.	44.	11.	(11593)	1.
GALVESTON	50.	0.	46.	4.	(166833)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
GARZA	3.	20.	73.	3.	(5121)	1.
GILLESPIE	0.	5.	90.	5.	(10553)	0.
GLASSCOCK	67.	0.	25.	8.	(980)	0.
GOLIAD	5.	16.	61.	18.	(5030)	0.
GONZALES	31.	31.	28.	10.	(15870)	0.
GRAY	0.	0.	46.	31.	(26949)	23.
GRAYSON	24.	0.	54.	6.	(83225)	16.
GREGG	42.	3.	38.	9.	(77686)	8.
GRIMES	71.	0.	25.	2.	(11855)	2.
GUADALUPE	9.	41.	37.	7.	(29348)	6.
HALE	0.	6.	27.	3.	(35121)	64.
HALL	0.	23.	71.	6.	(8056)	0.
HAMILTON	8.	0.	87.	4.	(7638)	1.
HANSFORD	0.	4.	84.	0.	(6831)	12.
HARDEMAN	0.	0.	89.	4.	(6795)	7.
HARDIN	65.	9.	24.	2.	(24034)	0.
HARRIS	66.	0.	21.	2.	(1724443)	11.
HARRISON	26.	15.	34.	13.	(45831)	12.
HARTLEY	0.	0.	92.	0.	(1127)	8.
HASKELL	24.	11.	51.	14.	(8581)	0.
HAYS	18.	1.	19.	62.	(27642)	0.
HEMPHILL	0.	8.	58.	30.	(3084)	4.
HENDERSON	23.	11.	48.	7.	(25701)	11.
HIDALGO	62.	7.	27.	3.	(183382)	1.
HILL	34.	13.	39.	9.	(23432)	5.
HOCKLEY	4.	24.	54.	14.	(20737)	4.
HOOD	19.	22.	51.	8.	(6035)	0.
HOPKINS	33.	9.	43.	7.	(20933)	8.
HOUSTON	12.	17.	39.	25.	(17855)	7.
HOWARD	33.	2.	46.	5.	(37796)	14.
HUDSPETH	62.	0.	38.	0.	(2392)	0.
HUNT	20.	14.	41.	20.	(46965)	5.
HUTCHINSON	0.	31.	38.	30.	(24443)	1.
IRION	0.	41.	39.	20.	(1070)	0.
JACK	22.	21.	41.	8.	(6711)	8.
JACKSON	79.	0.	21.	0.	(13506)	0.
JASPER	61.	5.	25.	2.	(25373)	7.
JEFF DAVIS	33.	0.	67.	0.	(2223)	0.
JEFFERSON	77.	0.	21.	2.	(248259)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
JIM HOGG	65.	0.	33.	0.	(4654)	2.
JIM WELLS	34.	24.	36.	3.	(33212)	3.
JOHNSON	33.	19.	28.	20.	(38594)	0.
JONES	25.	22.	35.	18.	(17864)	0.
KARNES	56.	3.	40.	1.	(13462)	0.
KAUFMAN	69.	7.	23.	0.	(29306)	1.
KENDALL	0.	0.	55.	0.	(6068)	45.
KENEDY	85.	0.	15.	0.	(678)	0.
KENT	0.	39.	46.	15.	(1565)	0.
KERR	0.	7.	60.	33.	(20350)	0.
KIMBLE	0.	20.	62.	8.	(3904)	10.
KING	35.	0.	58.	7.	(708)	0.
KINNEY	43.	0.	27.	5.	(2006)	25.
KLEBERG	73.	0.	24.	0.	(33166)	3.
KNOX	21.	8.	69.	2.	(6288)	0.
LA SALLE	54.	14.	29.	3.	(4592)	0.
LAMAR	17.	0.	33.	25.	(36314)	25.
LAMB	0.	13.	65.	17.	(18942)	5.
LAMPASAS	6.	9.	79.	3.	(8860)	3.
LAVACA	21.	16.	49.	8.	(20292)	6.
LEE	49.	0.	46.	4.	(8048)	1.
LEON	53.	1.	41.	5.	(8772)	0.
LIBERTY	53.	4.	31.	4.	(33947)	8.
LIMESTONE	29.	5.	40.	21.	(18100)	5.
LIPSCOMB	0.	0.	83.	3.	(3486)	14.
LIVE OAK	38.	5.	52.	5.	(6697)	0.
LLANO	9.	0.	81.	3.	(6269)	7.
LOVING	69.	0.	31.	0.	(327)	0.
LUBBOCK	27.	5.	44.	7.	(177787)	17.
LYNN	1.	11.	85.	1.	(8112)	2.
MADISON	52.	13.	28.	0.	(7659)	7.
MARION	55.	0.	44.	0.	(6932)	1.
MARTIN	37.	0.	63.	0.	(4858)	0.
MASON	0.	0.	99.	0.	(3356)	1.
MATAGORDA	31.	12.	33.	14.	(26506)	10.
MAVERICK	12.	41.	36.	8.	(18093)	3.
MCCULLOCH	19.	18.	54.	5.	(8912)	4.
MCLENNAN	43.	0.	38.	18.	(144809)	1.
MCMULLEN	61.	25.	11.	2.	(1095)	1.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
MEDINA	48.	7.	44.	1.	(20912)	0.
MENARC	0.	0.	85.	7.	(2646)	8.
MIDLAND	56.	0.	24.	2.	(65764)	18.
MILAM	21.	7.	58.	12.	(19510)	2.
MILLS	13.	7.	64.	4.	(4212)	12.
MITCHELL	7.	43.	38.	8.	(9073)	4.
MONTAGUE	11.	9.	77.	2.	(15326)	1.
MONTGOMERY	39.	6.	43.	5.	(41810)	7.
MOORE	0.	5.	74.	6.	(14060)	15.
MORRIS	58.	0.	39.	2.	(12310)	1.
MOTLEY	0.	28.	43.	29.	(1828)	0.
NACOGDOCHES	21.	0.	12.	57.	(36362)	10.
NAVARRC	19.	0.	40.	30.	(31135)	11.
NEWTON	51.	0.	44.	5.	(8140)	0.
NOLAN	0.	34.	46.	13.	(16233)	7.
NUECES	62.	0.	30.	2.	(236631)	6.
OCHILTREE	0.	6.	64.	4.	(9224)	26.
OLDHAM	0.	0.	81.	15.	(3947)	4.
ORANGE	85.	0.	15.	0.	(73381)	0.
PALO PINTO	1.	24.	41.	24.	(32977)	10.
PANOLA	38.	17.	34.	9.	(15894)	2.
PARKER	15.	45.	25.	10.	(26616)	5.
PARMER	0.	0.	59.	1.	(10240)	40.
PECOS	45.	6.	47.	1.	(13748)	1.
POLK	44.	4.	42.	4.	(14457)	6.
POTTER	6.	17.	44.	28.	(91091)	5.
PRESIDIO	28.	0.	67.	0.	(4842)	5.
RAINS	59.	0.	41.	0.	(4735)	0.
RANDALL	14.	2.	51.	32.	(52486)	1.
REAGAN	41.	27.	22.	9.	(3239)	1.
REAL	0.	0.	0.	0.	(1637)	100.
RED RIVER	59.	0.	39.	0.	(14046)	2.
REEVES	62.	8.	28.	0.	(16363)	2.
REFUGIO	38.	0.	31.	18.	(9494)	13.
ROBERTS	0.	0.	0.	46.	(967)	54.
ROBERTSON	54.	2.	37.	7.	(14907)	0.
ROCKWALL	46.	10.	38.	6.	(7230)	0.
RUNNELS	4.	12.	74.	6.	(12403)	4.
RUSK	31.	18.	38.	9.	(33393)	4.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
SABINE	67.	0.	33.	0.	(7187)	0.
SAN AUGUSTINE	53.	7.	39.	1.	(7858)	0.
SAN JACINTO	61.	0.	31.	8.	(6702)	0.
SAN PATRICIO	44.	9.	42.	5.	(48209)	0.
SAN SAEA	41.	0.	56.	0.	(5199)	3.
SCHLEICHER	3.	21.	61.	15.	(2277)	0.
SCURRY	11.	12.	68.	5.	(15760)	4.
SHACKELFORD	26.	0.	74.	0.	(3167)	0.
SHELBY	58.	4.	36.	2.	(19672)	0.
SHERMAN	0.	9.	59.	10.	(3657)	22.
SMITH	43.	0.	46.	4.	(97243)	7.
SOMERVELL	21.	0.	79.	0.	(2793)	0.
STARR	46.	1.	29.	4.	(17447)	20.
STEPHENS	3.	51.	5.	37.	(7576)	4.
STERLING	17.	0.	81.	0.	(1056)	2.
STONEWALL	0.	0.	0.	0.	(0)	0.
SUTTON	0.	48.	19.	5.	(3175)	28.
SWISHER	0.	15.	46.	13.	(9999)	26.
TARRANT	54.	3.	33.	9.	(717076)	1.
TAYLOR	49.	0.	30.	3.	(97853)	18.
TERRELL	0.	16.	80.	0.	(1951)	4.
TERRY	9.	22.	51.	3.	(14452)	15.
THROCKMORTON	4.	1.	90.	5.	(2205)	0.
TITUS	40.	20.	33.	5.	(17325)	2.
TOM GREEN	30.	0.	45.	3.	(70752)	22.
TRAVIS	32.	1.	47.	19.	(291582)	1.
TRINITY	43.	9.	42.	6.	(7628)	0.
TYLER	33.	2.	62.	3.	(12892)	0.
UPSHUR	72.	0.	28.	0.	(19033)	0.
UPTON	29.	24.	42.	4.	(4197)	1.
UVALDE	4.	29.	48.	15.	(17348)	4.
VAL VERDE	46.	8.	32.	12.	(27279)	2.
VAN ZANDT	43.	2.	49.	4.	(24441)	2.
VICTORIA	31.	15.	40.	7.	(52229)	7.
WALKER	10.	0.	10.	48.	(27680)	32.
WALLER	32.	0.	68.	0.	(295)	0.
WARD	43.	2.	46.	4.	(13019)	5.
WASHINGTON	26.	0.	35.	6.	(18842)	33.
WEBB	56.	0.	31.	4.	(72794)	9.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 5

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
TEXAS						
WHARTON	66.	6.	25.	2.	(37546)	1.
WHEELER	0.	29.	64.	7.	(6434)	0.
WICHITA	33.	15.	32.	18.	(121227)	2.
WILBARGER	0.	2.	63.	19.	(15355)	16.
WILLACY	62.	0.	25.	13.	(15570)	0.
WILLIAMSON	26.	18.	43.	5.	(37772)	8.
WILSON	72.	0.	28.	0.	(12863)	0.
WINKLER	28.	12.	45.	12.	(9640)	3.
WISE	23.	2.	71.	4.	(19752)	0.
WOOD	64.	0.	34.	2.	(18450)	0.
YOAKUM	12.	2.	52.	23.	(7344)	11.
YOUNG	20.	8.	56.	9.	(16042)	7.
ZAPATA	40.	8.	48.	4.	(4352)	0.
ZAVALA	73.	1.	26.	0.	(11370)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
COLORADO						
ADAMS	0.	0.	89.	5.	(194480)	6.
ALAMOSA	4.	0.	19.	77.	(11322)	0.
ARAPAHOE	0.	0.	84.	7.	(182111)	9.
ARCHULETA	0.	0.	83.	17.	(2733)	0.
BACA	0.	0.	79.	2.	(5325)	19.
BENT	0.	0.	63.	16.	(6493)	21.
BOULDER	0.	0.	72.	9.	(134267)	19.
CHAFFEE	0.	0.	43.	57.	(10162)	0.
CHEYENNE	0.	0.	88.	5.	(2396)	7.
CLEAR CREEK	0.	0.	33.	19.	(4940)	48.
CONEJOS	30.	0.	70.	0.	(7846)	0.
COSTILLA	0.	0.	100.	0.	(3091)	0.
CROWLEY	0.	0.	82.	3.	(2822)	15.
CUSTER	0.	0.	95.	2.	(1154)	3.
DELTA	0.	0.	84.	14.	(16301)	2.
DENVER	0.	0.	52.	10.	(500879)	38.
DOLORES	0.	0.	83.	0.	(1641)	17.
DOUGLAS	0.	0.	92.	7.	(8552)	1.
EAGLE	0.	0.	47.	3.	(8446)	50.
EL PASO	0.	0.	80.	16.	(235015)	4.
ELBERT	0.	0.	93.	4.	(4004)	3.
FREMONT	0.	0.	43.	51.	(21841)	6.
GARFIELD	0.	0.	64.	28.	(14636)	8.
GILPIN	0.	0.	0.	0.	(1066)	100.
GRAND	0.	0.	33.	18.	(4093)	49.
GUNNISON	0.	0.	5.	79.	(7578)	16.
HINSDALE	0.	0.	0.	0.	(202)	100.
HUERFANO	0.	0.	89.	9.	(6690)	2.
JACKSON	0.	0.	76.	22.	(1811)	2.
JEFFERSON	0.	0.	73.	11.	(205014)	16.
KIOWA	0.	0.	78.	8.	(2029)	14.
KIT CARSON	0.	3.	68.	18.	(7530)	11.
LA PLATA	0.	0.	37.	54.	(19199)	9.
LAKE	0.	0.	69.	11.	(8282)	20.
LARIMER	0.	0.	56.	12.	(89304)	32.
LAS ANIMAS	0.	0.	24.	32.	(15918)	44.
LINCOLN	0.	0.	82.	5.	(4836)	13.
LOGAN	0.	12.	67.	9.	(18418)	12.
MESA	0.	0.	64.	24.	(54559)	12.

TABLE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
COLCRADO						
MINERAL	0.	0.	19.	0.	(786)	81.
MOFFAT	0.	0.	79.	17.	(6525)	4.
MONTEZUMA	0.	0.	72.	16.	(12952)	12.
MONTROSE	0.	0.	59.	28.	(16731)	13.
MORGAN	0.	11.	44.	37.	(20661)	8.
CTERO	0.	0.	71.	13.	(23787)	16.
OURAY	0.	0.	87.	4.	(1546)	9.
PARK	0.	0.	100.	0.	(1257)	0.
PHILLIPS	0.	0.	66.	14.	(4565)	20.
PITKIN	0.	0.	0.	43.	(5237)	57.
PROWERS	0.	0.	50.	37.	(13258)	13.
PUEBLO	0.	0.	85.	5.	(118976)	10.
RIO BLANCO	0.	0.	37.	15.	(4842)	48.
RIO GRANDE	18.	0.	79.	2.	(11964)	1.
ROUTT	0.	0.	61.	27.	(6592)	12.
SAGUACHE	0.	0.	52.	30.	(2382)	18.
SAN JUAN	0.	0.	0.	0.	(831)	100.
SAN MIGUEL	0.	0.	80.	0.	(2569)	20.
SEDGWICK	0.	0.	59.	32.	(3405)	9.
SUMMIT	0.	0.	72.	1.	(2665)	27.
TELLER	0.	0.	66.	34.	(3306)	0.
WASHINGTON	0.	4.	78.	18.	(5550)	0.
WELD	0.	0.	62.	27.	(86572)	11.
YUMA	0.	3.	79.	15.	(8544)	3.
IOWA						
ADAIR	0.	0.	93.	6.	(9555)	1.
ADAMS	0.	0.	79.	18.	(6408)	3.
ALLAMAKEE	0.	0.	79.	10.	(14968)	11.
APPANOOSE	0.	0.	70.	10.	(15007)	20.
AUDUBON	0.	0.	76.	19.	(9252)	5.
BENTON	0.	0.	69.	18.	(23817)	13.
BLACK HAWK	0.	0.	73.	12.	(133424)	15.
BOONE	0.	0.	27.	43.	(26483)	30.
BREMER	0.	0.	77.	17.	(24176)	6.
BUCHANAN	0.	0.	75.	8.	(21054)	17.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
IOWA						
BUENA VISTA	0.	0.	28.	50.	(20693)	22.
BUTLER	0.	0.	91.	5.	(14028)	4.
CALHOUN	0.	0.	83.	14.	(16363)	3.
CARROLL	0.	0.	89.	3.	(23251)	8.
CASS	0.	1.	76.	17.	(17972)	6.
CEDAR	0.	0.	83.	6.	(16192)	11.
CERRO GORDO	0.	0.	32.	39.	(49835)	29.
CHEROKEE	0.	0.	47.	35.	(17269)	18.
CHICKASAW	0.	0.	89.	9.	(15622)	2.
CLARKE	0.	0.	97.	3.	(8461)	0.
CLAY	0.	0.	35.	32.	(18589)	33.
CLAYTON	0.	0.	78.	7.	(20680)	15.
CLINTCN	0.	0.	79.	13.	(57619)	8.
CRAWFORD	0.	0.	54.	33.	(18780)	13.
DALLAS	0.	0.	84.	8.	(24225)	8.
DAVIS	0.	0.	92.	4.	(6993)	4.
DECATUR	0.	0.	42.	52.	(9134)	6.
DELAWARE	0.	0.	86.	7.	(18043)	7.
DES MOINES	0.	0.	75.	6.	(47034)	19.
DICKINSON	0.	0.	82.	17.	(12481)	1.
DUBUQUE	0.	0.	66.	15.	(89256)	19.
EMMET	0.	0.	62.	10.	(14009)	28.
FAYETTE	0.	0.	73.	16.	(26076)	11.
FLOYD	0.	0.	42.	42.	(19860)	16.
FRANKLIN	0.	0.	81.	12.	(13515)	7.
FREMONT	0.	0.	88.	9.	(9050)	3.
GREENE	0.	0.	64.	30.	(14696)	6.
GRUNDY	0.	0.	86.	10.	(15756)	4.
GUTHRIE	0.	0.	79.	12.	(10020)	9.
HAMILTCN	0.	0.	59.	32.	(18383)	9.
HANCOCK	0.	0.	91.	3.	(11796)	6.
HARDIN	0.	0.	44.	33.	(22655)	23.
HARRISCN	0.	0.	78.	19.	(17575)	3.
HENRY	0.	0.	45.	19.	(18699)	36.
HOWARC	0.	1.	90.	8.	(12877)	1.
HUMBOLCT	0.	0.	66.	30.	(11274)	4.
IDA	0.	0.	80.	9.	(9394)	11.
IOWA	0.	0.	94.	4.	(14640)	2.
JACKSON	0.	0.	89.	8.	(21263)	3.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
IOWA						
JASPER	0.	2.	67.	18.	(35425)	13.
JEFFERSON	0.	0.	46.	33.	(15157)	21.
JOHNSON	0.	0.	35.	12.	(70365)	53.
JONES	0.	0.	79.	11.	(21229)	10.
KEOKUK	0.	12.	78.	9.	(13750)	1.
KOSSUTH	0.	0.	69.	20.	(22738)	11.
LEE	0.	0.	32.	33.	(43409)	35.
LINN	0.	0.	74.	11.	(164918)	15.
LOUISA	0.	0.	57.	6.	(11667)	37.
LUCAS	0.	0.	86.	5.	(10163)	9.
LYON	0.	0.	78.	12.	(12300)	10.
MADISON	0.	0.	84.	10.	(12599)	6.
MAHASKA	0.	0.	58.	32.	(22020)	10.
MARION	0.	0.	68.	26.	(27092)	6.
MARSHALL	0.	0.	27.	42.	(40896)	31.
MILLS	0.	1.	38.	57.	(12303)	4.
MITCHELL	0.	0.	82.	8.	(12597)	10.
MONONA	0.	0.	73.	21.	(12003)	6.
MONROE	0.	0.	96.	3.	(9124)	1.
MONTGOMERY	0.	0.	84.	11.	(13010)	5.
MUSCATINE	0.	0.	55.	25.	(38196)	20.
O BRIEN	0.	0.	86.	5.	(17960)	9.
OSCEOLA	0.	0.	81.	16.	(9595)	3.
PAGE	0.	0.	40.	39.	(19240)	21.
PALO ALTO	0.	0.	86.	8.	(13289)	6.
PLYMOUTH	0.	0.	62.	25.	(23138)	12.
POCAHONTAS	0.	0.	76.	16.	(13206)	8.
POLK	0.	0.	74.	16.	(290097)	10.
POTTAWATTAMIE	0.	0.	65.	15.	(83529)	20.
POWESHIEK	0.	0.	81.	6.	(19184)	13.
RINGGOLD	0.	0.	86.	13.	(6013)	1.
SAC	0.	0.	82.	15.	(15627)	3.
SCOTT	0.	0.	75.	8.	(141213)	17.
SHELBY	0.	0.	72.	14.	(15971)	14.
SIOUX	0.	0.	72.	22.	(27920)	6.
STORY	0.	0.	80.	8.	(62783)	12.
TAMA	0.	0.	77.	15.	(19884)	8.
TAYLOR	0.	0.	75.	23.	(8289)	2.
UNION	0.	0.	66.	24.	(13236)	10.

TABLE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
IOWA						
VAN BUREN	0.	0.	64.	3.	(8643)	33.
WAPELLC	0.	0.	86.	7.	(43527)	7.
WARREN	0.	0.	80.	12.	(19728)	8.
WASHINGTON	0.	0.	75.	17.	(19628)	8.
WAYNE	0.	0.	84.	9.	(8992)	7.
WEBSTER	0.	0.	42.	32.	(45912)	26.
WINNEBAGO	0.	0.	73.	12.	(14469)	15.
WINNESHIEK	0.	0.	61.	22.	(20922)	17.
WOODBURY	0.	0.	83.	6.	(103685)	11.
WORTH	0.	0.	85.	13.	(8468)	2.
WRIGHT	0.	0.	71.	13.	(17895)	16.
KANSAS						
ALLEN	0.	0.	42.	37.	(15440)	21.
ANDERSCN	0.	0.	13.	32.	(7135)	55.
ATCHISCN	0.	0.	20.	39.	(20173)	41.
BARBER	0.	30.	9.	61.	(7003)	0.
BARTON	0.	0.	8.	32.	(29449)	60.
BOURBON	0.	0.	34.	32.	(14818)	34.
BROWN	0.	0.	65.	22.	(12191)	13.
BUTLER	0.	0.	51.	22.	(34473)	27.
CHASE	0.	0.	91.	7.	(3677)	2.
CHAUTAUQUA	0.	0.	82.	10.	(3506)	8.
CHERCKEE	0.	0.	57.	23.	(21771)	20.
CHEYENNE	0.	0.	31.	50.	(4352)	19.
CLARK	0.	0.	67.	13.	(2935)	20.
CLAY	0.	28.	17.	55.	(9005)	0.
CLOUD	0.	29.	1.	69.	(14299)	1.
COFFEY	0.	0.	37.	36.	(6604)	27.
COMANCHE	0.	0.	37.	33.	(2665)	30.
COWLEY	0.	2.	14.	80.	(36157)	4.
CRAWFORD	0.	0.	21.	24.	(37877)	55.
DECATUR	0.	0.	23.	42.	(5947)	35.
DICKINSON	0.	22.	11.	66.	(20285)	1.
DONIPHAN	0.	0.	71.	14.	(8826)	15.
DOUGLAS	0.	0.	42.	20.	(61863)	38.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

KANSAS

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
EDWARDS	0.	0.	62.	13.	(4581)	25.
ELK	0.	0.	71.	10.	(4463)	19.
ELLIS	0.	0.	31.	26.	(24981)	43.
ELLSWORTH	0.	0.	59.	20.	(5821)	21.
FINNEY	0.	0.	63.	16.	(18613)	21.
FORD	0.	0.	14.	53.	(22657)	33.
FRANKLIN	0.	0.	28.	37.	(17861)	35.
GEARY	0.	0.	82.	12.	(28410)	6.
GOVE	0.	0.	49.	25.	(4332)	26.
GRAHAM	0.	0.	82.	8.	(4662)	10.
GRANT	0.	0.	30.	44.	(6107)	26.
GRAY	0.	0.	53.	23.	(4850)	24.
GREELEY	0.	0.	66.	19.	(1819)	15.
GREENWOOD	0.	0.	44.	42.	(9178)	14.
HAMILTON	0.	0.	4.	36.	(2747)	60.
HARPER	0.	19.	45.	35.	(7737)	1.
HARVEY	0.	0.	10.	39.	(25750)	51.
HASKELL	0.	0.	50.	26.	(3873)	24.
HODGEMAN	0.	0.	65.	15.	(2662)	20.
JACKSON	0.	0.	51.	26.	(9211)	23.
JEFFERSON	0.	0.	86.	5.	(8547)	9.
JEWELL	0.	0.	88.	10.	(5833)	2.
JOHNSON	0.	0.	69.	16.	(202834)	15.
KEARNY	0.	0.	49.	14.	(3047)	37.
KINGMAN	0.	0.	79.	20.	(9680)	1.
KIOWA	0.	0.	76.	19.	(4016)	5.
LABETTE	0.	0.	24.	33.	(24690)	43.
LANE	0.	0.	7.	68.	(2707)	25.
LEAVENWORTH	0.	0.	48.	13.	(52971)	39.
LINCOLN	0.	0.	88.	4.	(5100)	8.
LINN	0.	0.	64.	29.	(7770)	7.
LOGAN	0.	0.	10.	15.	(1585)	75.
LYON	0.	0.	14.	4.	(31112)	82.
MARION	0.	0.	27.	42.	(13705)	31.
MARSHALL	0.	0.	38.	23.	(13005)	39.
MCPHERSON	0.	0.	20.	34.	(23105)	46.
MEADE	0.	0.	16.	43.	(4055)	41.
MIAMI	0.	0.	61.	23.	(19508)	16.
MITCHELL	0.	0.	63.	15.	(7429)	22.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
KANSAS						
MONTGOMERY	0.	0.	35.	29.	(42472)	36.
MORRIS	0.	0.	79.	21.	(6653)	0.
MORTON	0.	0.	59.	22.	(3015)	19.
NEMAHA	0.	0.	50.	29.	(12016)	21.
NEOSHO	0.	0.	32.	41.	(17465)	27.
NESS	0.	0.	52.	21.	(4973)	27.
NORTON	0.	0.	70.	12.	(7057)	18.
OSAGE	0.	0.	67.	24.	(14123)	9.
OSBORNE	0.	0.	68.	17.	(7863)	15.
OTTAWA	0.	35.	23.	42.	(5168)	0.
PAWNEE	0.	0.	17.	34.	(8981)	49.
PHILLIPS	0.	0.	85.	8.	(7072)	7.
POTTAWATOMIE	0.	0.	55.	21.	(10850)	24.
PRATT	0.	0.	40.	21.	(9838)	39.
RAWLINS	0.	0.	48.	32.	(4297)	20.
RENO	0.	16.	22.	56.	(62428)	6.
REPUBLIC	0.	0.	65.	21.	(8226)	14.
RICE	0.	0.	66.	4.	(12034)	30.
RILEY	7.	0.	38.	23.	(58377)	32.
ROOKS	0.	0.	86.	9.	(7756)	5.
RUSH	0.	0.	67.	13.	(5117)	20.
RUSSELL	0.	0.	83.	7.	(9342)	10.
SALINE	0.	0.	46.	7.	(46083)	47.
SCOTT	0.	0.	60.	21.	(5656)	19.
SEDGWICK	1.	1.	77.	16.	(353542)	5.
SEWARD	0.	0.	75.	14.	(16400)	11.
SHAWNEE	0.	0.	58.	14.	(150942)	28.
SHERIDAN	0.	0.	42.	28.	(2867)	30.
SHERMAN	0.	0.	81.	2.	(8194)	17.
SMITH	0.	0.	89.	6.	(7141)	5.
STAFFORD	0.	0.	52.	12.	(6134)	36.
STANTON	0.	0.	40.	17.	(2287)	43.
STEVENS	0.	0.	30.	45.	(4613)	25.
SUMNER	0.	8.	52.	36.	(19710)	4.
THOMAS	0.	0.	30.	24.	(9230)	46.
TREGO	0.	0.	72.	21.	(4254)	7.
WABAUNSEE	0.	0.	87.	5.	(5367)	8.
WALLACE	0.	0.	25.	49.	(2215)	26.
WASHINGTON	0.	0.	71.	12.	(9761)	17.

TABLE 8.1. CCUNTY PRCTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
KANSAS						
WICHITA	0.	0.	30.	35.	(3274)	35.
WILSON	0.	0.	31.	30.	(11306)	39.
WOODSON	0.	0.	82.	11.	(5642)	7.
WYANCOTTE	0.	0.	72.	8.	(184650)	20.
MISSOURI						
ADAIR	0.	0.	46.	40.	(22472)	14.
ANDREW	0.	0.	95.	2.	(10877)	3.
ATCHISCN	0.	0.	32.	51.	(9473)	17.
AUDRAIN	0.	0.	77.	8.	(27842)	15.
BARRY	0.	0.	77.	9.	(22613)	14.
BARTON	0.	0.	90.	6.	(10417)	4.
BATES	0.	0.	83.	8.	(15681)	9.
BENTON	0.	0.	94.	5.	(11750)	1.
BOLLINGER	0.	0.	98.	2.	(9071)	0.
BOONE	0.	0.	88.	3.	(80501)	9.
BUCHANAN	0.	0.	72.	6.	(87320)	22.
BUTLER	13.	0.	60.	17.	(32485)	10.
CALDWELL	0.	0.	43.	12.	(8166)	45.
CALLAWAY	0.	0.	50.	21.	(24822)	29.
CAMDEN	0.	6.	27.	56.	(11075)	11.
CAPE GIRARDEAU	0.	0.	39.	40.	(51569)	21.
CARROLL	0.	0.	95.	2.	(12907)	3.
CARTER	0.	0.	94.	4.	(6722)	2.
CASS	0.	0.	65.	15.	(39006)	20.
CEDAR	0.	0.	89.	6.	(11145)	5.
CHARITCN	0.	0.	100.	0.	(10149)	0.
CHRISTIAN	0.	0.	94.	2.	(13408)	4.
CLARK	0.	0.	99.	0.	(8435)	1.
CLAY	0.	0.	74.	9.	(131263)	17.
CLINTON	0.	0.	95.	1.	(14535)	4.
COLE	0.	4.	15.	68.	(48101)	13.
COOPER	0.	0.	29.	71.	(16073)	0.
CRAWFORD	0.	0.	79.	1.	(13202)	20.
DADE	0.	0.	98.	2.	(7524)	0.
DALLAS	0.	0.	94.	1.	(11641)	5.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MISSOURI						
DAVIESS	0.	0.	82.	16.	(8782)	2.
DE KALB	0.	0.	63.	26.	(6579)	11.
DENT	0.	0.	81.	16.	(9986)	3.
DOUGLAS	0.	0.	89.	1.	(8909)	10.
DUNKLIN	17.	0.	76.	4.	(33041)	3.
FRANKLIN	0.	0.	67.	15.	(57591)	18.
GASCONADE	0.	0.	78.	13.	(15456)	9.
GENTRY	0.	0.	79.	19.	(7037)	2.
GREENE	0.	0.	69.	23.	(153954)	8.
GRUNDY	0.	0.	72.	13.	(11063)	15.
HARRISCN	0.	0.	81.	13.	(9427)	6.
HENRY	0.	0.	55.	13.	(19707)	32.
HICKORY	0.	0.	99.	1.	(4481)	0.
HOLT	0.	0.	69.	6.	(5813)	25.
HOWARD	0.	6.	44.	9.	(11123)	41.
HOWELL	0.	0.	93.	4.	(26340)	3.
IRON	0.	0.	77.	15.	(9516)	8.
JACKSON	0.	0.	64.	8.	(654726)	28.
JASPER	0.	0.	61.	9.	(79607)	30.
JEFFERSON	0.	0.	69.	7.	(85373)	24.
JOHNSON	0.	0.	57.	26.	(32890)	17.
KNOX	0.	0.	67.	0.	(4887)	33.
LACLEDE	0.	0.	84.	8.	(19169)	8.
LAFAYETTE	0.	0.	57.	33.	(26021)	10.
LAWRENCE	0.	0.	64.	18.	(23398)	18.
LEWIS	0.	0.	99.	0.	(10993)	1.
LINCOLN	0.	0.	64.	9.	(17822)	27.
LINN	0.	0.	73.	21.	(16143)	6.
LIVINGSTON	0.	0.	22.	46.	(14446)	32.
MACON	0.	0.	79.	13.	(15373)	8.
MADISON	0.	0.	90.	7.	(7937)	3.
MARIES	0.	12.	73.	6.	(5809)	9.
MARICN	0.	0.	33.	43.	(30747)	24.
MCDONALD	0.	0.	92.	0.	(10852)	8.
MERCER	0.	0.	90.	0.	(5364)	10.
MILLER	0.	21.	46.	32.	(20205)	1.
MISSISSIPPI	25.	0.	69.	5.	(16647)	1.
MONITEAU	0.	0.	53.	42.	(9276)	5.
MONROE	0.	0.	49.	22.	(7586)	29.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MISSOURI						
MONTGOMERY	0.	0.	100.	0.	(12248)	0.
MORGAN	0.	0.	86.	7.	(6597)	7.
NEW MADRID	24.	0.	69.	1.	(23111)	6.
NEWTON	0.	0.	81.	2.	(32826)	17.
NODAWAY	0.	0.	29.	43.	(23470)	28.
OREGON	0.	0.	82.	9.	(9615)	9.
OSAGE	0.	2.	73.	6.	(9069)	19.
OZARK	0.	0.	85.	7.	(6614)	8.
PEMISCCT	43.	0.	50.	5.	(27074)	2.
PERRY	0.	0.	80.	14.	(15038)	6.
PETTIS	0.	0.	61.	27.	(33288)	12.
PHELPS	0.	3.	38.	22.	(29276)	37.
PIKE	0.	0.	95.	1.	(15829)	4.
PLATTE	0.	0.	51.	8.	(19623)	41.
POLK	0.	0.	67.	24.	(12862)	9.
PULASKI	0.	1.	29.	41.	(55434)	29.
PUTNAM	0.	0.	81.	6.	(6389)	13.
RALLS	0.	0.	94.	3.	(7490)	3.
RANDOLPH	0.	0.	70.	13.	(22644)	17.
RAY	0.	0.	77.	14.	(14915)	9.
REYNOLDS	0.	0.	60.	8.	(7023)	32.
RIPLEY	0.	0.	93.	2.	(8940)	5.
SALINE	0.	0.	43.	35.	(25311)	22.
SCHUYLER	0.	0.	90.	2.	(4665)	8.
SCOTLAND	0.	0.	96.	1.	(5504)	3.
SCOTT	0.	0.	59.	22.	(31340)	19.
SHANNON	0.	0.	18.	0.	(2032)	82.
SHELBY	0.	0.	96.	2.	(8723)	2.
ST CHARLES	0.	0.	72.	18.	(87792)	10.
ST CLAIR	0.	0.	64.	5.	(6383)	31.
ST FRANCOIS	0.	0.	45.	21.	(37388)	34.
ST LCUIS	0.	0.	77.	9.	(914639)	14.
ST LOUIS CITY	0.	0.	67.	7.	(661869)	26.
STE GENEVIEVE	0.	0.	50.	11.	(11819)	39.
STODDARD	3.	0.	96.	1.	(27173)	0.
STONE	0.	0.	80.	0.	(9821)	20.
SULLIVAN	0.	0.	74.	20.	(8177)	6.
TANEY	0.	0.	66.	6.	(12635)	28.
TEXAS	0.	0.	100.	0.	(18841)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MISSOURI						
VERNON	0.	0.	43.	23.	(18610)	34.
WARREN	0.	0.	84.	14.	(7299)	2.
WASHINGTON	0.	0.	89.	2.	(14297)	9.
WAYNE	0.	0.	88.	9.	(7424)	3.
WEBSTER	0.	0.	94.	5.	(15754)	1.
WORTH	0.	0.	99.	1.	(3591)	0.
WRIGHT	0.	0.	97.	0.	(14886)	3.
MONTANA						
BEAVERHEAD	0.	0.	18.	12.	(7979)	70.
BIG HORN	0.	0.	52.	7.	(9297)	41.
BLAINE	0.	8.	65.	8.	(6727)	19.
BROADWATER	0.	0.	54.	27.	(2266)	19.
CARBON	0.	0.	97.	1.	(7080)	2.
CARTER	0.	0.	94.	3.	(1956)	3.
CASCADE	0.	0.	41.	52.	(80211)	7.
CHOUTEAU	0.	13.	55.	31.	(6473)	1.
CUSTER	0.	0.	26.	34.	(12174)	40.
DANIELS	0.	0.	69.	25.	(3096)	6.
DAWSON	0.	0.	32.	38.	(11269)	30.
DEER LODGE	0.	0.	23.	30.	(15652)	47.
FALLON	0.	2.	59.	33.	(4050)	6.
FERGUS	0.	0.	72.	18.	(12611)	10.
FLATHEAD	0.	14.	48.	34.	(39288)	4.
GALLATIN	0.	0.	28.	22.	(32765)	50.
GARFIELD	0.	2.	74.	20.	(1483)	4.
GLACIER	0.	38.	42.	20.	(10783)	0.
GOLDEN VALLEY	0.	0.	55.	0.	(931)	45.
GRANITE	0.	0.	27.	6.	(2420)	67.
HILL	0.	2.	26.	69.	(16419)	3.
JEFFERSON	0.	0.	9.	20.	(5238)	71.
JUDITH BASIN	0.	0.	94.	4.	(2667)	2.
LAKE	0.	0.	89.	4.	(13594)	7.
LEWIS AND CLARK	0.	0.	4.	22.	(33281)	74.
LIBERTY	0.	0.	61.	1.	(3298)	38.
LINCOLN	0.	0.	69.	4.	(17969)	27.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
MONTANA						
MADISON	0.	28.	30.	8.	(5014)	34.
MCCONE	0.	0.	63.	12.	(3435)	25.
MEAGHER	0.	0.	39.	9.	(2122)	52.
MINERAL	0.	0.	44.	0.	(2958)	56.
MISSOULA	0.	1.	64.	10.	(59607)	25.
MUSSELSHELL	0.	34.	27.	11.	(3734)	28.
PARK	0.	1.	67.	4.	(11206)	28.
PARK YNP	0.	0.	0.	0.	(0)	0.
PETROLEUM	0.	0.	72.	8.	(988)	20.
PHILLIPS	0.	17.	43.	23.	(5501)	17.
PONDERA	0.	0.	93.	4.	(6611)	3.
POWDER RIVER	0.	0.	84.	6.	(2862)	10.
POWELL	0.	0.	49.	27.	(6656)	24.
PRAIRIE	0.	11.	53.	17.	(1752)	19.
RAVALLI	0.	0.	90.	7.	(14409)	3.
RICHLAND	0.	0.	30.	30.	(9639)	40.
ROOSEVELT	0.	8.	74.	13.	(11052)	5.
ROSEBUD	0.	0.	69.	10.	(6792)	21.
SANDERS	0.	0.	74.	1.	(7187)	25.
SHERIDAN	0.	0.	30.	45.	(5277)	25.
SILVER BOW	0.	0.	70.	6.	(42189)	24.
STILLWATER	0.	0.	32.	20.	(3865)	48.
SWEET GRASS	0.	0.	83.	11.	(2980)	6.
TETON	0.	0.	91.	6.	(7709)	3.
TOOLE	0.	33.	32.	35.	(5839)	0.
TREASURE	0.	16.	48.	31.	(1069)	5.
VALLEY	0.	1.	17.	64.	(10796)	18.
WHEATLAND	0.	0.	73.	12.	(2529)	15.
WIBAUX	0.	0.	31.	0.	(1465)	69.
YELLOWSTONE	0.	0.	67.	10.	(88189)	23.
NEBRASKA						
ADAMS	0.	0.	15.	10.	(32861)	75.
ANTELOPE	0.	0.	80.	12.	(8298)	8.
ARTHUR	0.	0.	100.	0.	(606)	0.
BANNER	0.	0.	100.	0.	(2209)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NEBRASKA						
BLAINE	0.	0.	100.	0.	(1033)	0.
BOONE	0.	0.	82.	14.	(7655)	4.
BOX BUTTE	0.	0.	24.	51.	(10220)	25.
BOYD	0.	0.	98.	0.	(3805)	2.
BROWN	0.	0.	46.	46.	(4021)	8.
BUFFALO	0.	0.	29.	33.	(31965)	38.
BURT	0.	0.	73.	20.	(9496)	7.
BUTLER	0.	0.	54.	32.	(9010)	14.
CASS	0.	0.	72.	11.	(16482)	17.
CEDAR	0.	0.	55.	14.	(10732)	31.
CHASE	0.	0.	62.	21.	(4129)	17.
CHERRY	0.	0.	83.	12.	(6846)	5.
CHEYENNE	0.	0.	59.	18.	(10424)	23.
CLAY	0.	0.	31.	3.	(7718)	66.
COLFAX	0.	0.	71.	24.	(9439)	5.
CUMING	0.	0.	67.	23.	(11552)	10.
CUSTER	0.	0.	87.	8.	(14425)	5.
DAKOTA	0.	0.	91.	5.	(12961)	4.
DAWES	0.	0.	37.	13.	(9499)	50.
DAWSON	0.	0.	92.	4.	(19606)	4.
DEUEL	0.	0.	8.	85.	(2245)	7.
DIXON	0.	0.	89.	11.	(8018)	0.
DODGE	0.	0.	29.	49.	(36272)	22.
DOUGLAS	0.	0.	67.	14.	(393927)	19.
DUNDY	0.	0.	75.	25.	(3133)	0.
FILLMORE	0.	0.	87.	10.	(7840)	3.
FRANKLIN	0.	0.	95.	5.	(4175)	0.
FRONTIER	0.	0.	89.	9.	(3668)	2.
FURNAS	0.	0.	93.	7.	(7649)	0.
GAGE	0.	0.	34.	39.	(25672)	27.
GARDEN	0.	0.	91.	1.	(2982)	8.
GARFIELD	0.	0.	77.	20.	(2361)	3.
GOSPER	0.	0.	97.	0.	(2131)	3.
GRANT	0.	0.	52.	48.	(1019)	0.
GREELEY	0.	0.	86.	10.	(4291)	4.
HALL	0.	0.	39.	33.	(44739)	28.
HAMILTON	0.	0.	87.	8.	(9166)	5.
HARLAN	0.	0.	62.	6.	(4179)	32.
HAYES	0.	0.	90.	4.	(1598)	6.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NEBRASKA						
HITCHCOCK	0.	0.	92.	2.	(3526)	6.
HOLT	0.	0.	88.	8.	(13043)	4.
HOOKER	0.	0.	81.	19.	(939)	0.
HOWARD	0.	0.	97.	2.	(5892)	1.
JEFFERSON	0.	0.	61.	25.	(9538)	14.
JOHNSON	0.	0.	67.	25.	(5743)	8.
KEARNEY	0.	0.	76.	12.	(6053)	12.
KEITH	0.	0.	91.	9.	(8959)	0.
KEYA PAHA	0.	0.	88.	12.	(1340)	0.
KIMBALL	0.	0.	77.	10.	(6009)	13.
KNOX	0.	0.	83.	14.	(11723)	3.
LANCASTER	0.	0.	52.	16.	(166859)	32.
LINCOLN	0.	0.	70.	23.	(29599)	7.
LOGAN	0.	0.	100.	0.	(23326)	0.
LOUP	0.	0.	100.	0.	(964)	0.
MADISON	0.	0.	20.	17.	(29556)	63.
MCPHERSON	0.	0.	92.	8.	(778)	0.
MERRICK	0.	0.	89.	8.	(8190)	3.
MORRILL	0.	1.	86.	11.	(8623)	2.
NANCE	0.	0.	86.	13.	(5069)	1.
NEMAHA	0.	0.	60.	26.	(8046)	14.
NUCKOLLS	0.	0.	0.	0.	(0)	0.
OTOE	0.	0.	74.	0.	(309)	26.
PAWNEE	0.	0.	90.	9.	(4473)	1.
PERKINS	0.	0.	55.	33.	(3403)	12.
PHELPS	0.	0.	60.	23.	(10154)	17.
PIERCE	0.	0.	96.	2.	(9821)	2.
PLATTE	0.	0.	41.	24.	(27899)	35.
POLK	0.	0.	70.	21.	(6785)	9.
RED WILLOW	0.	0.	71.	24.	(12332)	5.
RICHARDSON	0.	0.	63.	25.	(12277)	12.
ROCK	0.	0.	74.	24.	(2231)	2.
SALINE	0.	0.	51.	28.	(14194)	21.
SARPY	0.	0.	63.	18.	(40015)	19.
SAUNDERS	0.	0.	68.	29.	(15607)	3.
SCOTTS BLUFF	0.	0.	0.	0.	(0)	0.
SEWARD	0.	0.	46.	27.	(14708)	27.
SHERIDAN	0.	4.	53.	22.	(7611)	21.
SHERMAN	0.	0.	93.	7.	(4155)	0.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NEBRASKA						
SIOUX	0.	0.	95.	0.	(11198)	5.
STANTON	0.	0.	94.	2.	(4916)	4.
THAYER	0.	0.	92.	6.	(8215)	2.
THOMAS	0.	0.	60.	27.	(826)	13.
THURSTCN	0.	0.	82.	16.	(7308)	2.
VALLEY	0.	0.	58.	32.	(5163)	10.
WASHINGTON	0.	0.	64.	30.	(12400)	6.
WAYNE	0.	0.	37.	1.	(9834)	62.
WEBSTER	0.	0.	85.	13.	(4717)	2.
WHEELER	0.	0.	100.	0.	(1054)	0.
YORK	0.	0.	52.	34.	(12281)	14.
NORTH DAKOTA						
ADAMS	0.	0.	63.	30.	(3555)	7.
BARNES	0.	2.	45.	35.	(15018)	18.
BENSON	0.	0.	90.	10.	(7401)	0.
BILLINGS	0.	0.	69.	31.	(1198)	0.
BOTTINEAU	0.	3.	61.	32.	(8873)	4.
BOWMAN	0.	0.	100.	0.	(3867)	0.
BURKE	0.	0.	92.	7.	(5028)	1.
BURLEIGH	0.	3.	35.	24.	(42520)	38.
CASS	0.	0.	66.	32.	(73313)	2.
CAVALIER	0.	0.	72.	23.	(8335)	5.
DICKEY	0.	0.	58.	18.	(8347)	24.
DIVIDE	0.	0.	61.	29.	(4564)	10.
DUNN	0.	0.	98.	2.	(3616)	0.
EDDY	0.	0.	65.	26.	(3904)	9.
EMMONS	0.	0.	86.	3.	(6228)	11.
FOSTER	0.	0.	21.	30.	(4832)	49.
GOLDEN VALLEY	0.	0.	76.	13.	(2611)	11.
GRAND FORKS	0.	1.	45.	38.	(61061)	16.
GRANT	0.	0.	99.	1.	(5390)	0.
GRIGGS	0.	0.	100.	0.	(4508)	0.
HETTINGER	0.	0.	82.	12.	(5075)	6.
KIDDER	0.	0.	84.	8.	(4362)	8.
LA MOURE	0.	0.	85.	11.	(6277)	4.

TABLE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
NORTH DAKOTA						
LOGAN	0.	0.	97.	0.	(5171)	3.
MCHENRY	0.	3.	81.	16.	(7600)	0.
MCINTOSH	0.	0.	86.	9.	(4881)	5.
MCKENZIE	0.	0.	83.	13.	(6890)	4.
MCLEAN	0.	0.	75.	14.	(10719)	11.
MERCER	0.	0.	54.	15.	(6177)	31.
MORTON	0.	0.	53.	25.	(17666)	22.
MOUNTRAIL	0.	0.	88.	4.	(8423)	8.
NELSON	0.	0.	68.	32.	(5393)	0.
OLIVER	0.	0.	90.	10.	(2322)	0.
PEMBINA	0.	4.	82.	9.	(10912)	5.
PIERCE	0.	18.	61.	18.	(6208)	3.
RAMSEY	0.	0.	42.	41.	(12695)	17.
RANSOM	0.	0.	74.	20.	(9281)	6.
RENVILLE	0.	0.	53.	24.	(3971)	23.
RICHLAND	0.	0.	48.	22.	(19487)	30.
ROLETTE	0.	0.	24.	35.	(11658)	41.
SARGENT	0.	0.	85.	11.	(2068)	4.
SHERIDAN	0.	0.	94.	6.	(4448)	0.
SIOUX	0.	0.	76.	23.	(3921)	1.
SLOPE	0.	0.	100.	0.	(1484)	0.
STARK	0.	0.	20.	40.	(21724)	40.
STEELE	0.	0.	92.	0.	(3398)	8.
STUTSMAN	0.	0.	26.	31.	(23550)	43.
TOWNER	0.	6.	87.	3.	(4783)	4.
TRAILL	0.	20.	24.	54.	(10188)	2.
WALSH	0.	14.	59.	21.	(15851)	6.
WARD	0.	6.	37.	34.	(58884)	23.
WELLS	0.	6.	68.	9.	(9123)	17.
WILLIAMS	0.	1.	35.	44.	(19002)	20.
SOUTH DAKOTA						
AURCRA	0.	0.	70.	23.	(4108)	7.
BEADLE	0.	0.	24.	34.	(20391)	42.
BENNETT	0.	0.	57.	32.	(3088)	11.
BON HOMME	0.	0.	74.	18.	(8734)	8.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
SOUTH DAKOTA						
BROOKINGS	0.	0.	31.	29.	(21955)	40.
BROWN	0.	0.	22.	47.	(36827)	31.
BRULE	0.	0.	76.	19.	(6114)	5.
BUFFALO	0.	0.	59.	0.	(1885)	41.
BUTTE	0.	0.	47.	43.	(7234)	10.
CAMPBELL	0.	0.	98.	2.	(2866)	0.
CHARLES MIX	0.	0.	64.	16.	(10040)	20.
CLARK	0.	0.	80.	16.	(5706)	4.
CLAY	0.	0.	99.	1.	(12054)	0.
CODINGTON	0.	0.	14.	44.	(18570)	42.
CORSON	0.	0.	70.	21.	(4869)	9.
CUSTER	0.	19.	50.	23.	(4543)	8.
DAVISON	0.	0.	17.	45.	(17951)	38.
DAY	0.	0.	76.	21.	(7786)	3.
DEUEL	0.	0.	69.	20.	(5686)	11.
DEWEY	0.	0.	91.	3.	(5068)	6.
DOUGLAS	0.	0.	94.	5.	(4435)	1.
EDMUNDS	0.	0.	86.	9.	(5463)	5.
FALL RIVER	0.	0.	12.	35.	(7978)	53.
FAULK	0.	0.	82.	17.	(3978)	1.
GRANT	0.	0.	50.	36.	(9964)	14.
GREGORY	0.	0.	85.	12.	(6685)	3.
HAAKON	0.	7.	68.	23.	(3038)	2.
HAMLIN	0.	0.	73.	11.	(4827)	16.
HAND	0.	11.	54.	18.	(5121)	17.
HANSON	0.	0.	83.	1.	(3617)	16.
HARDING	0.	0.	94.	4.	(2167)	2.
HUGHES	0.	2.	12.	0.	(10529)	86.
HUTCHINSON	0.	0.	88.	10.	(9870)	2.
HYDE	0.	0.	23.	33.	(2500)	44.
JACKSON	0.	0.	92.	6.	(1460)	2.
JERAULD	0.	0.	74.	21.	(3629)	5.
JONES	0.	9.	67.	23.	(1885)	1.
KINGSBURY	0.	0.	74.	21.	(8337)	5.
LAKE	0.	0.	42.	39.	(10779)	19.
LAWRENCE	0.	0.	24.	34.	(17453)	42.
LINCOLN	0.	0.	69.	30.	(11918)	1.
LYMAN	0.	0.	83.	15.	(4089)	2.
MARSHALL	0.	0.	87.	11.	(6593)	2.

TABLE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
SOUTH DAKOTA						
MCCOOK	0.	0.	84.	9.	(7836)	7.
MCPHERSON	0.	0.	83.	9.	(5097)	8.
MEADE	0.	0.	48.	39.	(10101)	13.
MELLETTE	0.	0.	98.	1.	(2728)	1.
MINER	0.	0.	87.	0.	(4369)	13.
MINNEHAHA	0.	0.	67.	10.	(96684)	23.
MOODY	0.	0.	53.	20.	(7507)	27.
PENNINGTON	0.	14.	37.	43.	(66667)	6.
PERKINS	0.	0.	39.	55.	(4348)	6.
POTTER	0.	0.	89.	10.	(4262)	1.
ROBERTS	0.	0.	74.	19.	(11172)	7.
SANBORN	0.	0.	81.	4.	(3229)	15.
SHANNON	0.	0.	62.	36.	(7839)	2.
SPINK	0.	0.	63.	16.	(11829)	21.
STANLEY	0.	19.	55.	25.	(3424)	1.
SULLY	0.	0.	86.	4.	(2549)	10.
TODD	0.	0.	63.	18.	(6203)	19.
TRIPP	0.	0.	82.	13.	(8353)	5.
TURNER	0.	0.	83.	13.	(9496)	4.
UNION	0.	0.	73.	21.	(9349)	6.
WALWORTH	0.	0.	68.	28.	(8221)	4.
WASHABAUGH	0.	0.	100.	0.	(1139)	0.
YANKTON	0.	0.	15.	46.	(19290)	39.
ZIEBACH	0.	0.	89.	10.	(2025)	1.
UTAH						
BEAVER	0.	0.	0.	0.	(3800)	100.
BOX ELDER	0.	7.	31.	60.	(28129)	2.
CACHE	0.	1.	20.	62.	(42331)	17.
CARBON	0.	0.	11.	48.	(15760)	41.
DAGGETT	0.	0.	0.	0.	(666)	100.
DAVIS	0.	0.	68.	27.	(86261)	5.
DUCHESNE	0.	0.	50.	42.	(6618)	8.
EMERY	0.	0.	0.	0.	(5201)	100.
GARFIELD	0.	0.	8.	28.	(3249)	64.
GRAND	0.	0.	62.	14.	(6628)	24.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
UTAH						
IRON	0.	0.	12.	51.	(12177)	37.
JUAB	0.	0.	45.	26.	(4574)	29.
KANE	0.	0.	0.	0.	(2357)	100.
MILLARC	0.	0.	48.	20.	(6988)	32.
MORGAN	0.	0.	0.	87.	(4429)	13.
PIUTE	0.	0.	47.	21.	(1164)	32.
RICH	0.	0.	7.	27.	(1615)	66.
SALT LAKE	0.	0.	79.	8.	(451713)	13.
SAN JUAN	19.	0.	5.	1.	(9574)	75.
SANPETE	0.	0.	34.	21.	(10976)	45.
SEVIER	0.	0.	55.	13.	(10103)	32.
SUMMIT	0.	0.	1.	1.	(5433)	98.
TOOELE	0.	0.	58.	9.	(21545)	33.
UINTAH	0.	0.	50.	21.	(13365)	29.
UTAH	0.	2.	50.	35.	(137676)	13.
WASATCH	0.	38.	0.	59.	(5850)	3.
WASHINGTON	0.	0.	14.	34.	(13669)	52.
WAYNE	0.	0.	19.	72.	(1483)	9.
WEBER	0.	2.	56.	38.	(127074)	4.
WYOMING						
ALBANY	0.	0.	7.	1.	(26431)	92.
BIG HORN	0.	0.	64.	8.	(9987)	28.
CAMPBELL	0.	18.	38.	40.	(12815)	4.
CARBON	0.	0.	55.	29.	(13354)	16.
CONVERSE	0.	0.	23.	60.	(5642)	17.
CROOK	0.	15.	54.	31.	(4677)	0.
FREMONT	0.	0.	85.	6.	(28557)	9.
GOSHEN	0.	1.	75.	21.	(10906)	3.
HOT SPRINGS	0.	0.	21.	60.	(4952)	19.
JOHNSON	0.	0.	76.	19.	(5637)	5.
LARAMIE	0.	1.	48.	48.	(56264)	3.
LINCOLN	0.	0.	82.	14.	(8640)	4.
NATRONA	0.	0.	75.	10.	(51425)	15.
NIOBRARA	0.	0.	46.	32.	(3031)	22.
PARK & YNP	0.	0.	66.	14.	(17998)	20.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 6

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
WYOMING						
PLATTE	0.	10.	59.	21.	(6589)	10.
SHERIDAN	0.	0.	46.	21.	(17802)	33.
SUBLETTE	0.	0.	98.	2.	(3632)	0.
SWEETWATER	0.	0.	57.	28.	(18186)	15.
TETON	0.	0.	40.	52.	(4915)	8.
UINTA	0.	0.	37.	19.	(7100)	44.
WASHAKIE	0.	0.	68.	27.	(7569)	5.
WESTON	0.	26.	34.	33.	(6307)	7.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 7

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ARIZONA						
APACHE	37.	17.	26.	19.	(34197)	1.
COCHISE	0.	4.	17.	48.	(61910)	31.
COCCNINO	0.	7.	17.	38.	(46569)	38.
GILA	8.	23.	31.	35.	(32656)	3.
GRAHAM	1.	34.	40.	24.	(16578)	1.
GREENLEE	0.	20.	57.	21.	(10330)	2.
MARICOPA	46.	2.	36.	5.	(963210)	11.
MOHAVE	0.	8.	15.	25.	(24819)	52.
NAVAJO	10.	40.	43.	7.	(48316)	0.
PIMA	42.	8.	26.	23.	(351040)	1.
PINAL	36.	15.	26.	23.	(57995)	0.
SANTA CRUZ	0.	35.	46.	9.	(14241)	10.
YAVAPAI	0.	6.	13.	50.	(37935)	31.
YUMA	54.	4.	28.	12.	(60827)	2.
CALIFCRNIA						
ALAMEDA	10.	0.	74.	4.	(1056384)	12.
ALPINE	0.	0.	49.	20.	(484)	31.
AMADOR	0.	32.	31.	22.	(13461)	15.
BUTTE	4.	4.	76.	9.	(101745)	7.
CALAVERAS	0.	16.	50.	17.	(11921)	17.
COLUSA	0.	0.	95.	1.	(11094)	4.
CONTRA COSTA	8.	0.	84.	3.	(508862)	5.
DEL NORTE	18.	8.	69.	4.	(15716)	1.
EL DORADO	0.	20.	71.	3.	(41090)	6.
FRESNO	16.	2.	72.	10.	(417491)	0.
GLENN	0.	13.	80.	1.	(16069)	6.
HUMBOLDT	6.	1.	66.	13.	(98556)	14.
IMPERIAL	19.	7.	51.	13.	(74562)	10.
INYO	20.	8.	28.	4.	(15629)	40.
KERN	22.	1.	66.	7.	(313677)	4.
KINGS	3.	22.	62.	10.	(63154)	3.
LAKE	0.	6.	81.	9.	(18455)	4.
LASSEN	6.	13.	56.	4.	(13662)	21.
LOS ANGELES	23.	0.	60.	5.	(7023936)	12.
MADERA	0.	7.	83.	5.	(37656)	5.

TAELE B.1. CCUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 7

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
CALIFORNIA						
MARIN	4.	0.	85.	3.	(185803)	8.
MARIPOSA	0.	0.	3.	2.	(5389)	95.
MENDCCINO	0.	6.	72.	12.	(51184)	10.
MERCED	6.	20.	61.	9.	(104256)	4.
MODOC	6.	3.	85.	0.	(7901)	6.
MONO	0.	0.	32.	1.	(3624)	67.
MONTEREY	16.	0.	63.	5.	(250330)	16.
NAPA	1.	0.	92.	1.	(75072)	6.
NEVADA	0.	13.	76.	9.	(26263)	2.
ORANGE	53.	0.	33.	6.	(1346778)	8.
PLACER	0.	12.	62.	16.	(73874)	10.
PLUMAS	0.	5.	71.	22.	(13969)	2.
RIVERSIDE	22.	3.	61.	13.	(455535)	1.
SACRAMENTO	33.	0.	54.	12.	(626993)	1.
SAN BENITO	0.	5.	88.	0.	(18459)	7.
SAN BERNARDINO	23.	1.	65.	4.	(661347)	7.
SAN DIEGO	26.	0.	67.	2.	(1343378)	5.
SAN FRANCISCO	0.	0.	80.	3.	(682422)	17.
SAN JOAQUIN	9.	3.	67.	21.	(281101)	0.
SAN LUIS OBISP	1.	13.	39.	29.	(99676)	18.
SAN MATEO	0.	0.	84.	14.	(506275)	2.
SANTA BARBARA	33.	6.	49.	11.	(269974)	1.
SANTA CLARA	24.	0.	65.	4.	(1099701)	7.
SANTA CRUZ	11.	2.	73.	9.	(162986)	5.
SHASTA	23.	11.	33.	4.	(79011)	29.
SIERRA	0.	25.	62.	10.	(1774)	3.
SISKIYOU	0.	0.	83.	3.	(32368)	14.
SOLANO	12.	7.	64.	10.	(177004)	7.
SONOMA	2.	0.	89.	5.	(203558)	4.
STANISLAUS	8.	2.	83.	2.	(198369)	5.
SUTTER	0.	19.	66.	10.	(32939)	5.
TEHAMA	0.	0.	84.	12.	(29371)	4.
TRINITY	7.	0.	75.	2.	(7442)	16.
TULARE	4.	12.	73.	8.	(186857)	3.
TUOLUMNE	0.	2.	50.	13.	(22133)	35.
VENTURA	40.	1.	39.	11.	(365632)	9.
YOLO	9.	2.	78.	3.	(89164)	8.
YUBA	26.	8.	54.	8.	(58994)	4.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 7

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
	HAWAII					
HAWAII	0.	0.	44.	11.	(63468)	45.
HONOLULU	20.	4.	50.	12.	(627640)	14.
KALAWAC	100.	0.	0.	0.	(172)	0.
KAUAI	27.	5.	50.	6.	(29761)	12.
MAUI	23.	5.	49.	8.	(45984)	15.
	NEVADA					
CARSON CITY	3.	0.	7.	37.	(18199)	53.
CHURCHILL	0.	25.	43.	5.	(10513)	27.
CLARK	43.	2.	47.	7.	(273288)	1.
DOUGLAS	0.	1.	39.	0.	(6801)	60.
ELKO	0.	26.	33.	12.	(13790)	29.
ESMERALDA	0.	0.	0.	84.	(629)	16.
EUREKA	0.	0.	28.	1.	(924)	71.
HUMBOLDT	0.	5.	31.	24.	(6841)	40.
LANDER	0.	0.	0.	0.	(2577)	100.
LINCOLN	0.	2.	51.	40.	(2557)	7.
LYON	0.	0.	12.	1.	(6832)	87.
MINERAL	3.	0.	2.	63.	(7051)	32.
NYE	5.	0.	26.	19.	(5599)	50.
PERSHING	0.	0.	5.	0.	(2162)	95.
STOREY	0.	0.	0.	0.	(660)	100.
WASHOE	0.	2.	69.	17.	(119842)	12.
WHITE PINE	0.	24.	37.	16.	(10473)	23.

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MANUAL ESTIMATION OF FALLOUT CASUALTIES.(U)
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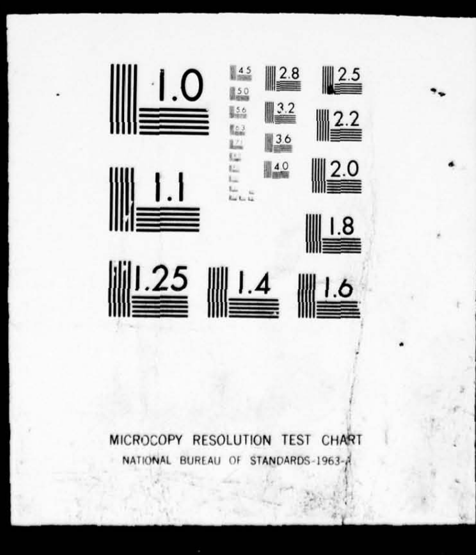

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 8

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
ALASKA						
ALEUTIAN ISLAN	5.	0.	22.	32.	(5074)	41.
ANCHORAGE	0.	1.	79.	3.	(123949)	17.
BARROW-NORTH S	11.	0.	89.	0.	(2481)	0.
BETHEL	65.	0.	35.	0.	(7666)	0.
BRISTOL BAY	16.	0.	84.	0.	(4464)	0.
BRISTOL BAY BOROUGH	0.	0.	0.	0.	(0)	0.
CORDOVA-MCCARTHY	0.	16.	29.	55.	(1857)	0.
FAIRBANKS	0.	0.	78.	5.	(47480)	17.
HAINES	0.	0.	0.	0.	(0)	0.
JUNEAU	0.	0.	56.	31.	(13556)	13.
KENAI-COOK INL	2.	11.	59.	23.	(14250)	5.
KETCHIKAN	0.	0.	99.	0.	(11680)	1.
KOBUK	47.	0.	53.	0.	(4616)	0.
KODIAK	2.	0.	41.	10.	(9409)	47.
KUSKOKWIM	9.	0.	91.	0.	(2318)	0.
MATANUSKA-SUSITNA	0.	0.	95.	0.	(7119)	5.
NOME	23.	0.	60.	13.	(5212)	4.
OUTER KETCHIKAN	0.	0.	0.	0.	(0)	0.
PRINCE OF WALE	35.	0.	65.	0.	(2179)	0.
SEWARD	0.	0.	48.	23.	(2285)	29.
SITKA	2.	0.	54.	25.	(6490)	19.
SKAGWAY-YAKUTA	8.	0.	65.	9.	(3747)	18.
UPPER YUKON	32.	0.	68.	0.	(1732)	0.
VALDEZ-CHITINA-WHITT	0.	0.	100.	0.	(3034)	0.
WADE HAMPTON	78.	0.	22.	0.	(4483)	0.
WRANGELL-PETER	4.	1.	81.	11.	(4913)	3.
YUKON-KOYUKUK	2.	0.	97.	0.	(6976)	1.
IDAHO						
ADA	0.	0.	80.	8.	(105126)	12.
ADAMS	0.	0.	99.	1.	(2877)	0.
BANNOCK	0.	1.	56.	10.	(52092)	33.
BEAR LAKE	0.	0.	5.	15.	(5801)	80.
BENEWAH	0.	0.	54.	20.	(6122)	26.
BINGHAM	0.	0.	69.	13.	(29167)	18.
BLAINE	0.	0.	20.	40.	(5515)	40.

TABLE 8.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 8

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
IDAHO						
BOISE	0.	0.	96.	4.	(1960)	0.
BONNER	0.	0.	65.	5.	(15699)	30.
BONNEVILLE	0.	9.	55.	28.	(50141)	8.
BOUNDARY	0.	0.	58.	16.	(6371)	26.
BUTTE	0.	0.	90.	10.	(3159)	0.
CAMAS	0.	0.	91.	1.	(728)	8.
CANYON	0.	7.	71.	14.	(63582)	8.
CARIBOU	0.	11.	47.	28.	(7149)	14.
CASSIA	0.	0.	70.	12.	(20139)	18.
CLARK	0.	0.	0.	0.	(741)	100.
CLEARWATER	0.	0.	57.	19.	(11516)	24.
CUSTER	0.	0.	56.	0.	(2690)	44.
ELMORE	0.	17.	57.	26.	(17241)	0.
FRANKLIN	0.	0.	90.	8.	(7373)	2.
FREMONT & YNP	0.	0.	79.	11.	(7522)	10.
GEM	0.	0.	87.	4.	(9190)	9.
GOODING	0.	0.	66.	12.	(8812)	22.
IDAHO	0.	0.	95.	3.	(14237)	2.
JEFFERSON	0.	0.	64.	31.	(13795)	5.
JEROME	0.	0.	57.	2.	(10253)	41.
KOOTENAI	0.	0.	83.	8.	(35288)	9.
LATAH	0.	0.	29.	22.	(24138)	49.
LEMHI	0.	0.	89.	3.	(5843)	8.
LEWIS	0.	0.	0.	0.	(1686)	100.
LINCOLN	0.	0.	0.	0.	(3057)	100.
MADISON	0.	0.	100.	0.	(13474)	0.
MINIDOKA	0.	13.	71.	9.	(12609)	7.
NEZ PERCE	0.	0.	59.	19.	(31332)	22.
ONEIDA	0.	0.	90.	3.	(2864)	7.
OWYHEE	0.	0.	84.	5.	(11470)	11.
PAYETTE	0.	1.	95.	4.	(13084)	0.
POWER	0.	0.	47.	22.	(4456)	31.
SHOSHONE	0.	0.	3.	0.	(19718)	97.
TETON	0.	0.	100.	0.	(2351)	0.
TWIN FALLS	0.	2.	72.	10.	(41640)	16.
VALLEY	0.	0.	92.	8.	(3609)	0.
WASHINGTON	0.	0.	73.	8.	(6950)	19.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 8

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
OREGON						
BAKER	0.	0.	62.	23.	(15149)	15.
BENTON	0.	1.	33.	1.	(54612)	65.
CLACKAMAS	0.	0.	90.	5.	(152890)	5.
CLATSOP	0.	0.	39.	29.	(28473)	32.
COLUMBIA	0.	0.	82.	6.	(28790)	12.
COOS	0.	2.	73.	17.	(56644)	8.
CROOK	0.	8.	76.	4.	(9985)	12.
CURRY	0.	9.	81.	8.	(12877)	2.
DESCHUTES	0.	3.	70.	11.	(29219)	16.
DOUGLAS	1.	0.	73.	10.	(71402)	16.
GILLIAM	0.	0.	76.	14.	(2330)	10.
GRANT	0.	0.	82.	10.	(6992)	8.
HARNEY	0.	0.	65.	16.	(7215)	19.
HOOD RIVER	0.	0.	60.	2.	(13642)	38.
JACKSON	3.	1.	64.	16.	(94639)	16.
JEFFERSON	0.	2.	44.	17.	(8548)	37.
JOSEPHINE	0.	2.	80.	6.	(35746)	12.
KLAMATH	6.	0.	76.	7.	(51201)	11.
LAKE	1.	0.	50.	32.	(6343)	17.
LANE	17.	0.	66.	3.	(205160)	14.
LINCOLN	1.	0.	87.	9.	(25762)	3.
LINN	3.	0.	73.	13.	(71837)	11.
MALHEUR	0.	42.	37.	21.	(23247)	0.
MARION	0.	4.	71.	23.	(152025)	2.
MORROW	0.	7.	74.	12.	(4204)	7.
MULTNOMAH	0.	0.	74.	11.	(541538)	15.
POLK	0.	12.	63.	25.	(35732)	0.
SHERMAN	0.	0.	0.	0.	(2139)	100.
TILLAMOOK	0.	0.	84.	10.	(17923)	6.
UMATILLA	0.	0.	55.	22.	(45184)	23.
UNION	0.	0.	60.	31.	(19073)	9.
WALLOWA	0.	0.	82.	17.	(6247)	1.
WASCO	0.	0.	34.	30.	(19678)	36.
WASHINGTON	0.	1.	82.	8.	(157029)	9.
WHEELER	0.	21.	53.	26.	(1861)	0.
YAMHILL	0.	0.	78.	9.	(40348)	13.

TABLE B.1. COUNTY PROTECTION FACTOR PROFILES, COMMUNITY SHELTER PLAN, 1970 POPULATION

REGION 8

COUNTY NAME	PF 5	PF 15	PF 28	PF 70	(POPULATION)	PF 400
WASHINGTON						
ADAMS	0.	0.	64.	14.	(3884)	22.
ASOTIN	0.	0.	96.	3.	(13799)	1.
BENTON	0.	0.	64.	25.	(70207)	11.
CHELAN	0.	0.	26.	36.	(46915)	38.
CLALLAM	1.	12.	54.	14.	(34780)	19.
CLARK	0.	0.	86.	3.	(122376)	11.
COLUMBIA	0.	0.	77.	3.	(4439)	20.
COWLITZ	0.	0.	61.	26.	(67577)	13.
DOUGLAS	0.	0.	57.	5.	(11166)	38.
FERRY	0.	0.	88.	4.	(4673)	8.
FRANKLIN	0.	0.	76.	17.	(29097)	7.
GARFIELD	0.	0.	66.	8.	(2911)	26.
GRANT	0.	0.	71.	2.	(43784)	27.
GRAYS HARBOR	0.	3.	66.	20.	(59586)	11.
ISLAND	0.	0.	81.	5.	(25015)	14.
JEFFERSON	3.	2.	51.	13.	(10551)	31.
KING	0.	0.	84.	4.	(1145457)	12.
KITSAP	0.	0.	82.	2.	(106080)	16.
KITTITAS	0.	0.	51.	34.	(25084)	15.
KLICKITAT	0.	0.	89.	10.	(12539)	1.
LEWIS	0.	2.	59.	21.	(45789)	18.
LINCOLN	0.	10.	46.	22.	(10893)	22.
MASON	0.	7.	61.	9.	(17495)	23.
OKANOGAN	0.	0.	68.	19.	(24582)	13.
PACIFIC	0.	2.	75.	10.	(16743)	13.
PEND OREILLE	0.	1.	21.	0.	(4266)	78.
PIERCE	0.	0.	80.	18.	(410082)	2.
SAN JUAN	0.	0.	72.	11.	(3856)	17.
SKAGIT	0.	5.	73.	7.	(51487)	15.
SKAMANIA	0.	0.	89.	2.	(5444)	9.
SNOHOMISH	0.	0.	85.	4.	(245650)	11.
SPOKANE	0.	0.	73.	10.	(284381)	17.
STEVENS	0.	5.	83.	3.	(17061)	9.
THURSTON	0.	0.	66.	2.	(76894)	32.
WAHKIAKUM	0.	0.	99.	1.	(2645)	0.
WALLA WALLA	0.	2.	57.	17.	(42176)	24.
WHATCOM	0.	1.	71.	6.	(82655)	22.
WHITMAN	0.	1.	93.	5.	(37981)	1.

Appendix C

FALLOUT FATALITY AND INJURY FUNCTIONS

Appendix C

FALLOUT FATALITY AND INJURY FUNCTIONS

The fatality and injury scales on the fallout casualty (FC) template were derived from several sources. An exponential function for total fallout casualties, plotted in Fig. C.1, was supplied by Dr. David Bensen, DCPA. The fatalities function in Fig. C.1 was assembled from various data and from consultation with several people and is described in further detail in the following discussion. The injuries function is simply the difference between the total casualties and fatalities.

The derivation of the fatalities function began with data in Radiobiological Factors in Manned Space Flight.[*] The lines marked "normal man" and "patients" taken from this source are reproduced in Fig. C.2, with the abscissa changed from dose in rads (midline absorbed dose) to exposure in roentgens. The midline absorbed dose in rads is multiplied by 3/2 to obtain the exposure in roentgens.[**,***]

The "normal man" line in Fig. C.2 is a postulated relationship. In a private communication, Clarence Lushbaugh, one of the panel members who produced these two response curves stated that he and Wright Langham (deceased), chairman of the panel, had considered using the bisector of the lines for "normal man" and "patients" to represent the incidence of lethality from radiation exposure in an average mixed U.S. population, containing both young and old males and females. This bisector is represented by the dashed line "a" in Fig. C.2. This curve was to be

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[*] W. H. Langham (Ed.), Radiobiological Factors in Manned Space Flight, National Academy of Sciences, National Research Council, Washington, D.C., 1967, pp. 111-14.

[**] V. P. Bond, E. P. Cronkite, C. A. Sondhaus, G. Imirie, J. S. Robertson, and D. C. Borg, "The Influence of Exposure Geometry on the Pattern of Radiation Dose Delivered to Large Animal Phantoms," Radia. Res. 6: 554-72 (1957).

[***] C. E. Clifford and R. A. Facey, "Changes in Acute Radiation Hazards Associated with Changes in Exposure Geometry," Health Phys. 18: 217-25 (1970).

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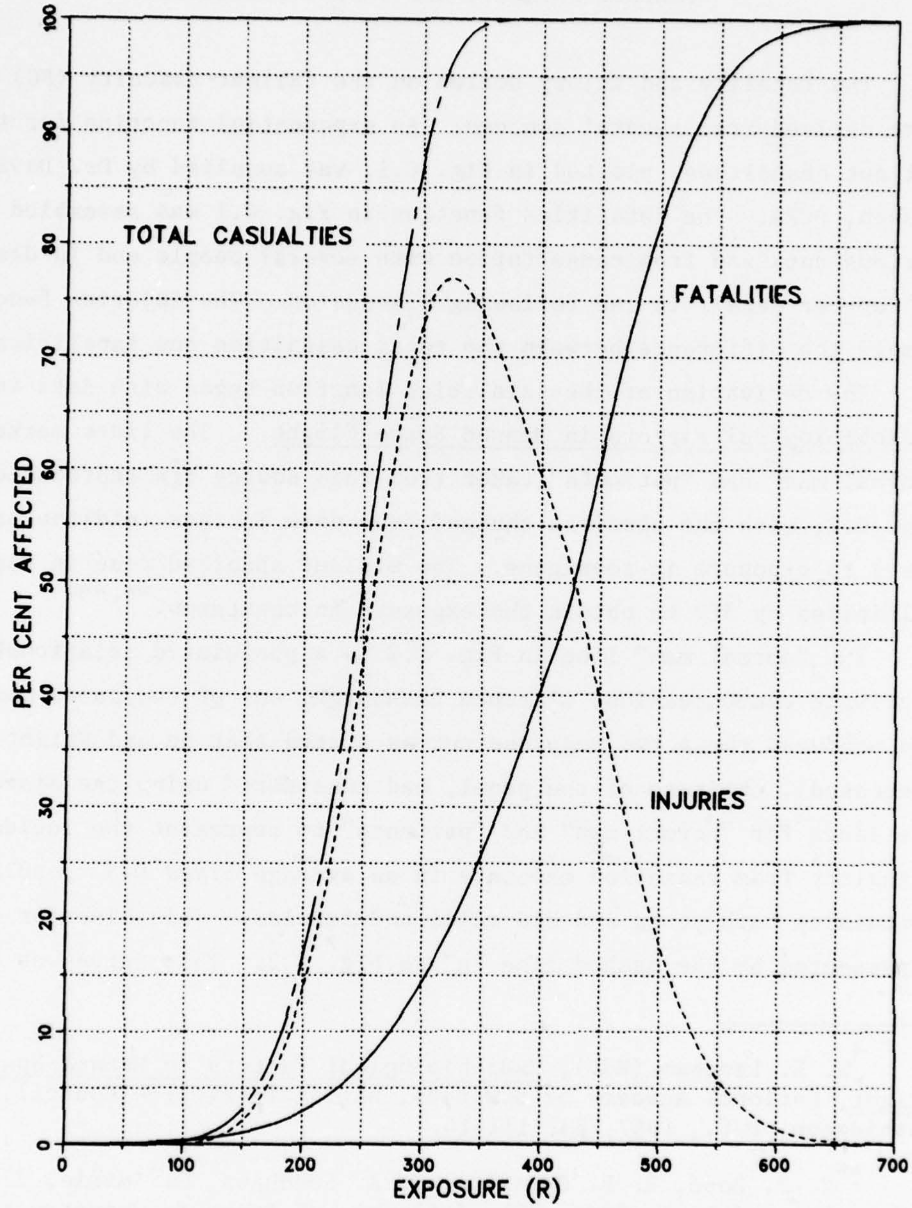

Fig. C.1. Casualties, injuries, and fatalities as a function of short-term radiation exposure.

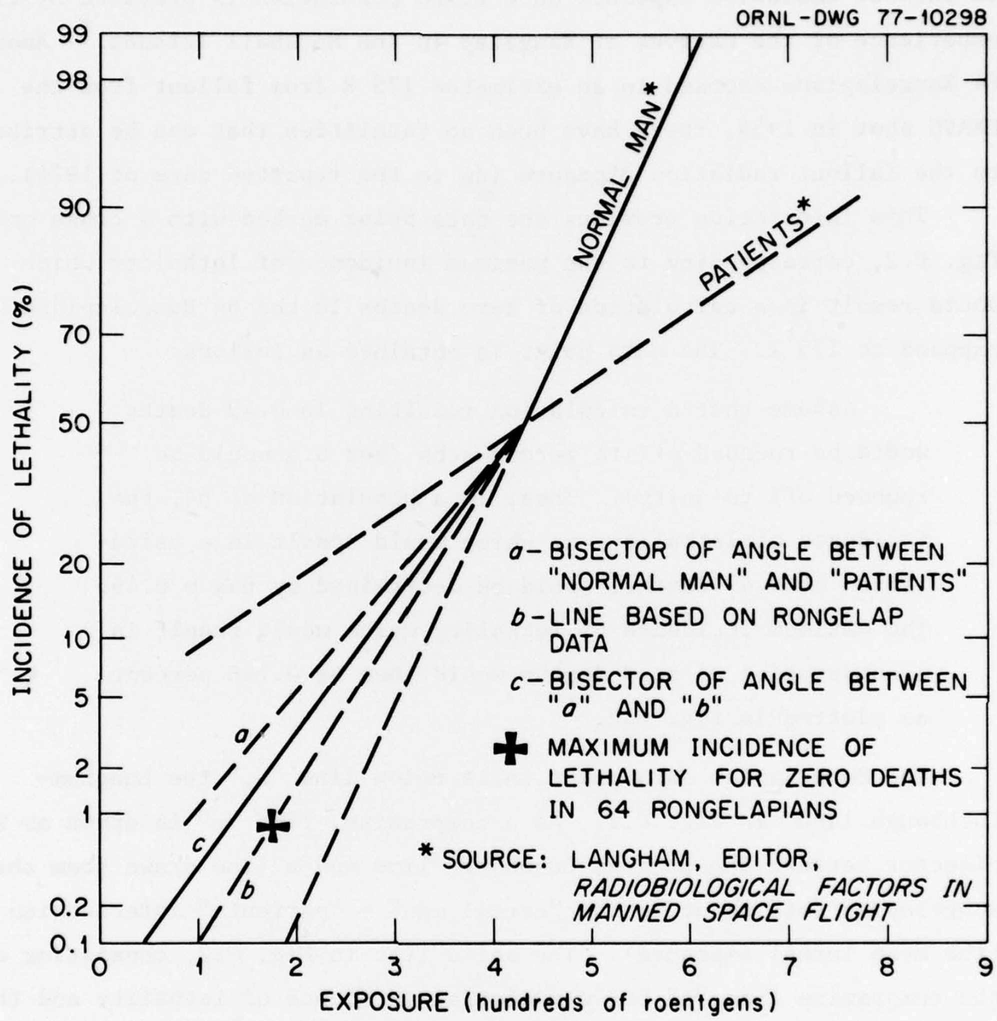

Fig. C.2. Incidence of lethality vs exposure.

used below the mean exposure; above the mean, the "normal man" line was considered appropriate.

The only case to date where actual data are available on the effects of fallout radiation exposure on a mixed population is provided by the experience of the natives of Rongelap in the Marshall Islands.* Among 64 Rongelapians exposed to an estimated 175 R from fallout from the BRAVO shot in 1954, there have been no fatalities that can be attributed to the fallout radiation exposure (up to the reported date of 1974).

This information provides the data point marked with a cross on Fig. C.2, corresponding to the maximum incidence of lethality which would result in a calculation of zero deaths in the 64 Rongelapians exposed to 175 R. The data point is obtained as follows:

> Assume that a calculation resulting in 0.49 deaths would be rounded off to zero deaths (but 0.5 would be rounded off to unity). Then, in a population of 64, the incidence of lethality, <u>x</u>, which would result in a calculation of 0.49 deaths, would be determined by $64x = 0.49$. The maximum incidence of lethality which would result in a computation of zero deaths would then be 0.766 percent, as plotted in Fig. C.2.

The Rongelapian data point falls below line "a," the Langham-Lushbaugh line, in Fig. C.2. As a compromise, line "c" is drawn as a bisector between the Langham-Lushbaugh line and a line drawn from the Rongelapian data point to the "normal man" - "patients" intersection (the mean lethal exposure). The solid line in Fig. C.2, consisting of the compromise line "c" below midlethal incidence of lethality and the "normal man" line above midlethal, is the basis of the fatality function used to construct the FC template. This function is a modified normal distribution function with a mean lethal exposure of approximately 430 R and approximate standard deviations of 120 R below the mean and 80 R above.

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*R. A. Conard et al., <u>A Twenty-Year Review of Medical Findings in a Marshallese Population Exposed to Radioactive Fallout</u>, BNL 50424, Brookhaven National Laboratory, 1975.

The incidence of lethality in Fig. C.2 is higher for the normal man than for patients beyond the midlethal region, reflecting doctor and hospital care for patients.

The casualty funcitons given here are intended to be applied to a population that has been exposed to a varying radiation intensity, in which most of the exposure occurs within the first few days. Within one week after a large one-day attack, the fallout radiation intensities will be reduced by factors of tens to hundreds (depending on the time of arrival of the fallout) from the peak radiation intensities. If the population survives the radiation exposure of the first week, it has a good chance of continued survival despite additional exposure to lower level fallout radiation.

Guidelines for an allowable additional exposure to radiation are found in the "Penalty" table (Table C.1). Its development and recommended use are described in NCRP Report No. 42, Radiological Factors Affecting Decision-Making in a Nuclear Attack. Table C.1 is intended to provide an alternative guideline to that provided by the Equivalent Residual Dose (ERD) concept, which has been discredited by a number of people.[*,**]

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[*] Palmer Steward, "Mathematical Models for Mammalian Radiation Response for Space Applications," in Space Radiation Biology and Related Topics, Academic Press, 1974.

[**] W. H. Langham, 111-14.

Table C.1. The "Penalty" table*

	Medical care will be needed by	Accumulated radiation exposures (R) in any period of		
		a	b	c
		One Week	One Month	Four Months
A	NONE	150	200	300
B	SOME (5 percent may die)	250	350	500
C	MOST (50 percent may die)	450	600	---

*Taken from NCRP Report No. 42, Radiological Factors Affecting Decision-Making in a Nuclear Attack. The table is called the "Penalty" table because it indicates the consequences (in terms of death and need for medical care) of various amounts of radiation exposure accumulated within various periods of time.

Appendix D

CHOICE OF AREAL UNIT

Appendix D

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The basic areal unit chosen for the table of protection factor profiles (Table B.1) is the county-type unit, of which there are approximately 3300 in the United States. The data for the counties were constructed from existing data for standard location areas and enumeration districts. These data for smaller areal units could have been used to construct a table of profiles based on 2-minute grids or quadrangles instead of counties. The county-type unit was chosen in preference to quadrangles for these reasons:

1. Counties are usually of desirable area for fallout estimations and are usually larger in more sparsely populated areas.
2. Data for counties can be cross-checked with available references.
3. County boundaries follow natural and political boundaries.
4. Many casualty estimators will be familiar with county characteristics in their states and regions.
5. County boundaries and names are printed on the DCPA regional maps.

Photographic reductions of regional maps with county boundaries and their population centroids are shown in Figs. D.1 through D.8. The originals were plotted to a scale of 1:2,500,000 by computer to supply overlays to the DCPA regional maps. The computer drawn maps also show the location of DFUS data points.

ORNL-DWG 77-18978

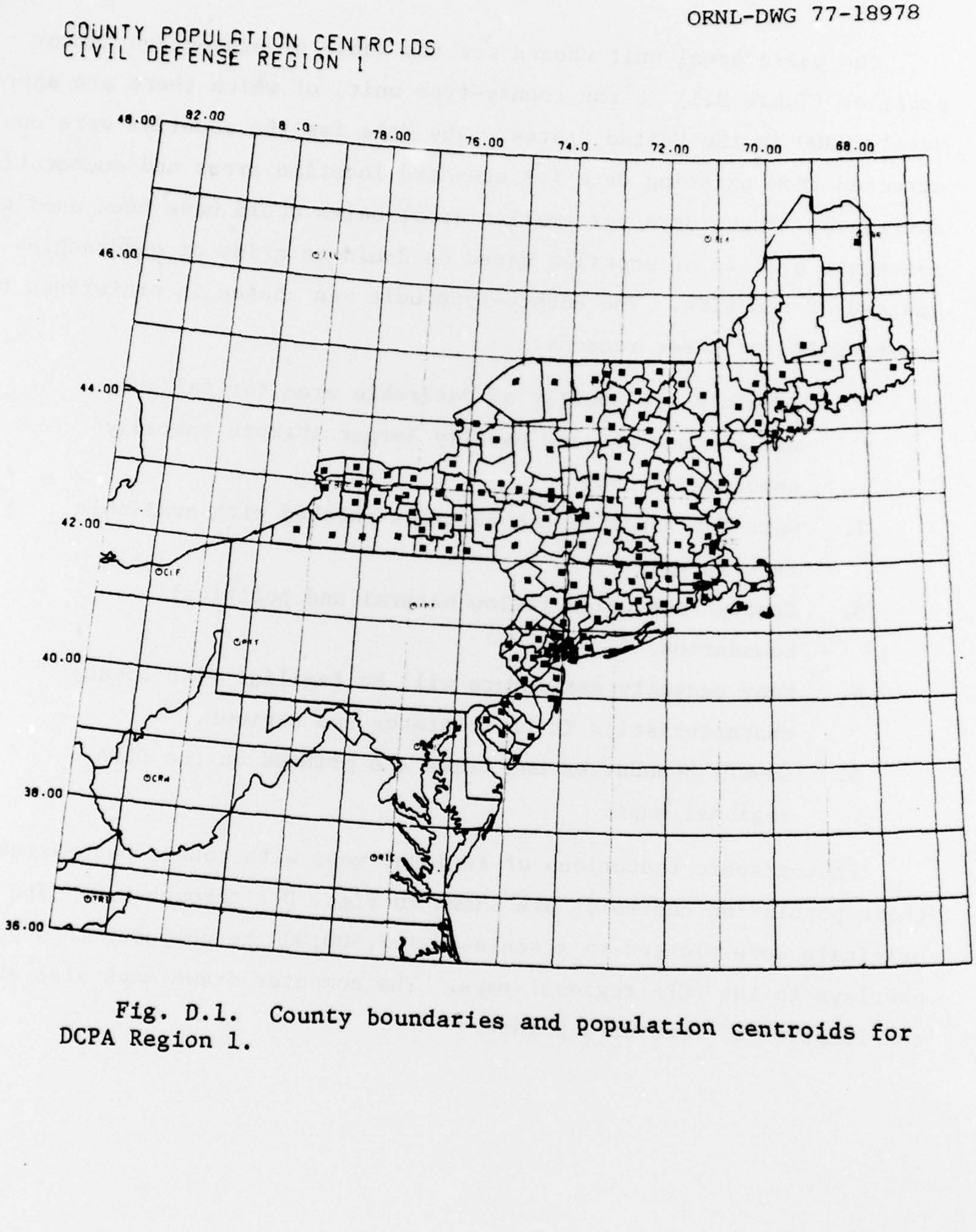

Fig. D.1. County boundaries and population centroids for DCPA Region 1.

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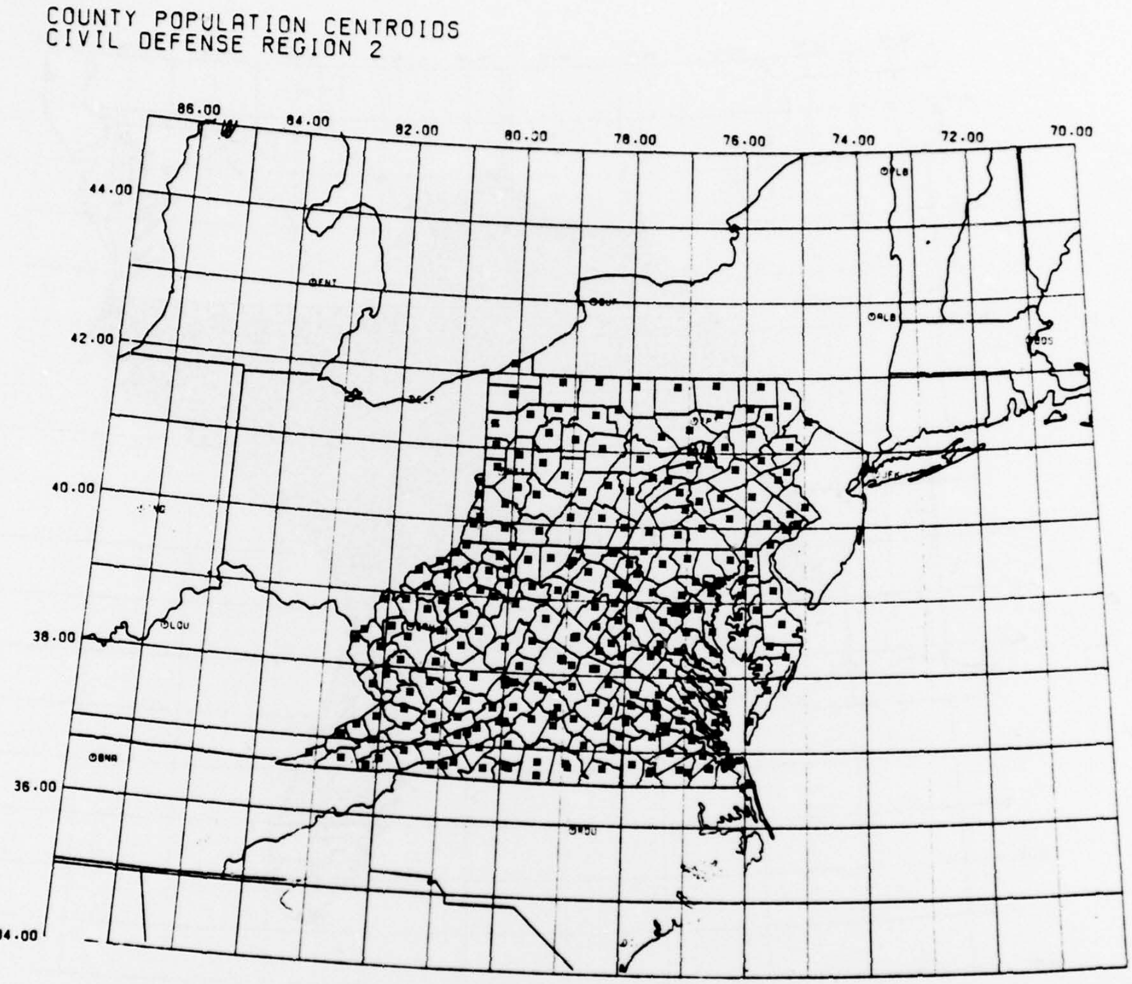

Fig. D.2. County boundaries and population centroids for DCPA Region 2.

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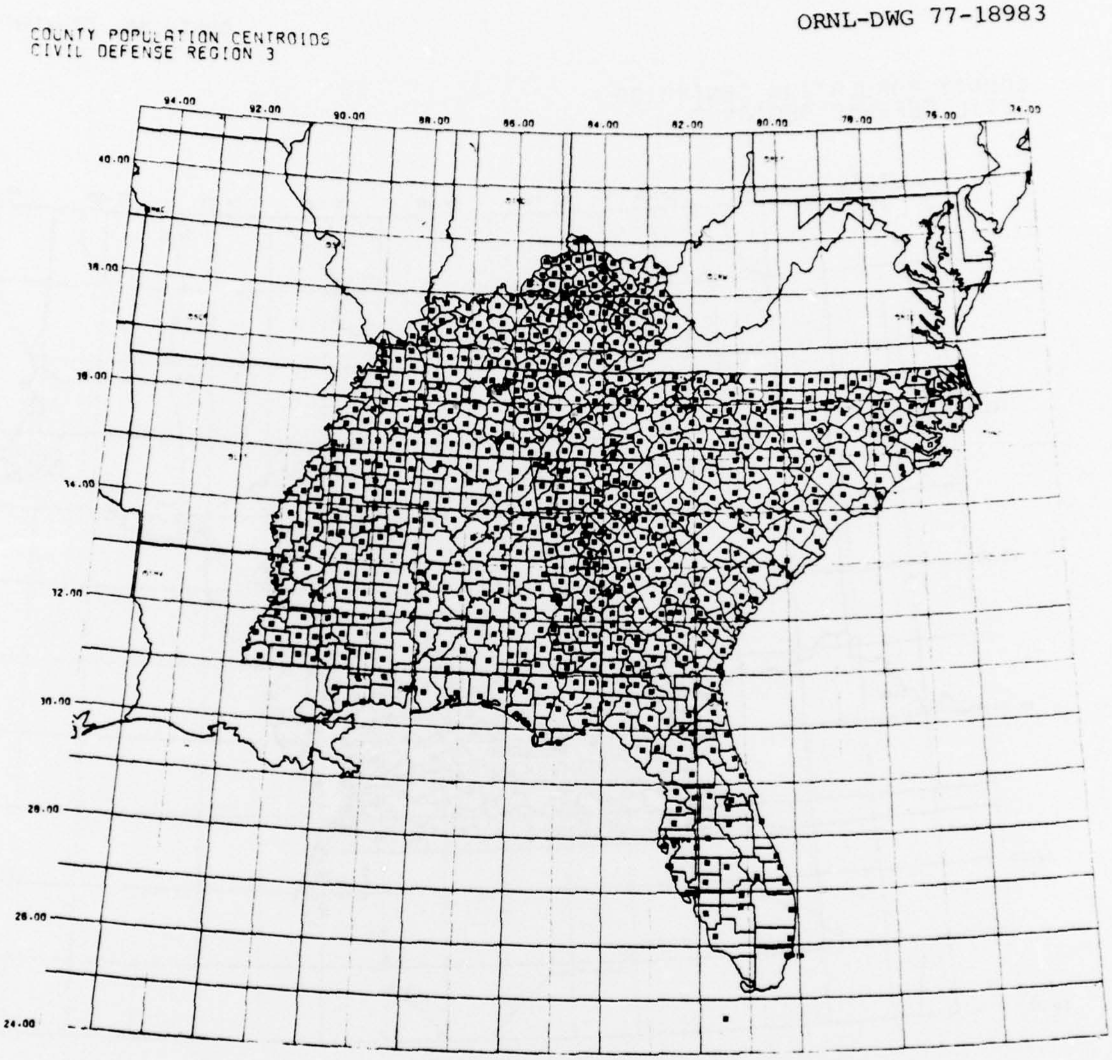

Fig. D.3. County boundaries and population centroids for DCPA Region 3.

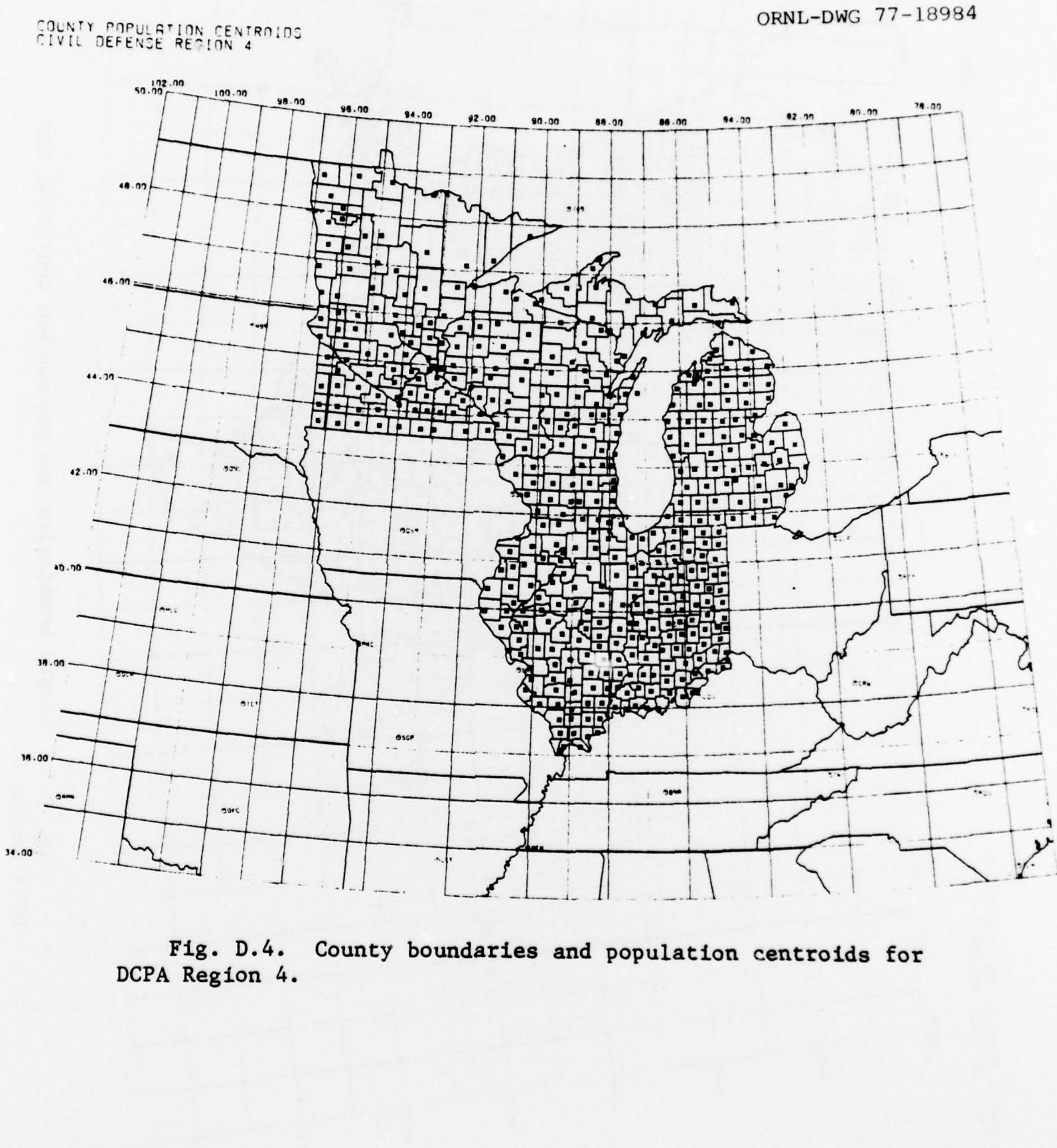

Fig. D.4. County boundaries and population centroids for DCPA Region 4.

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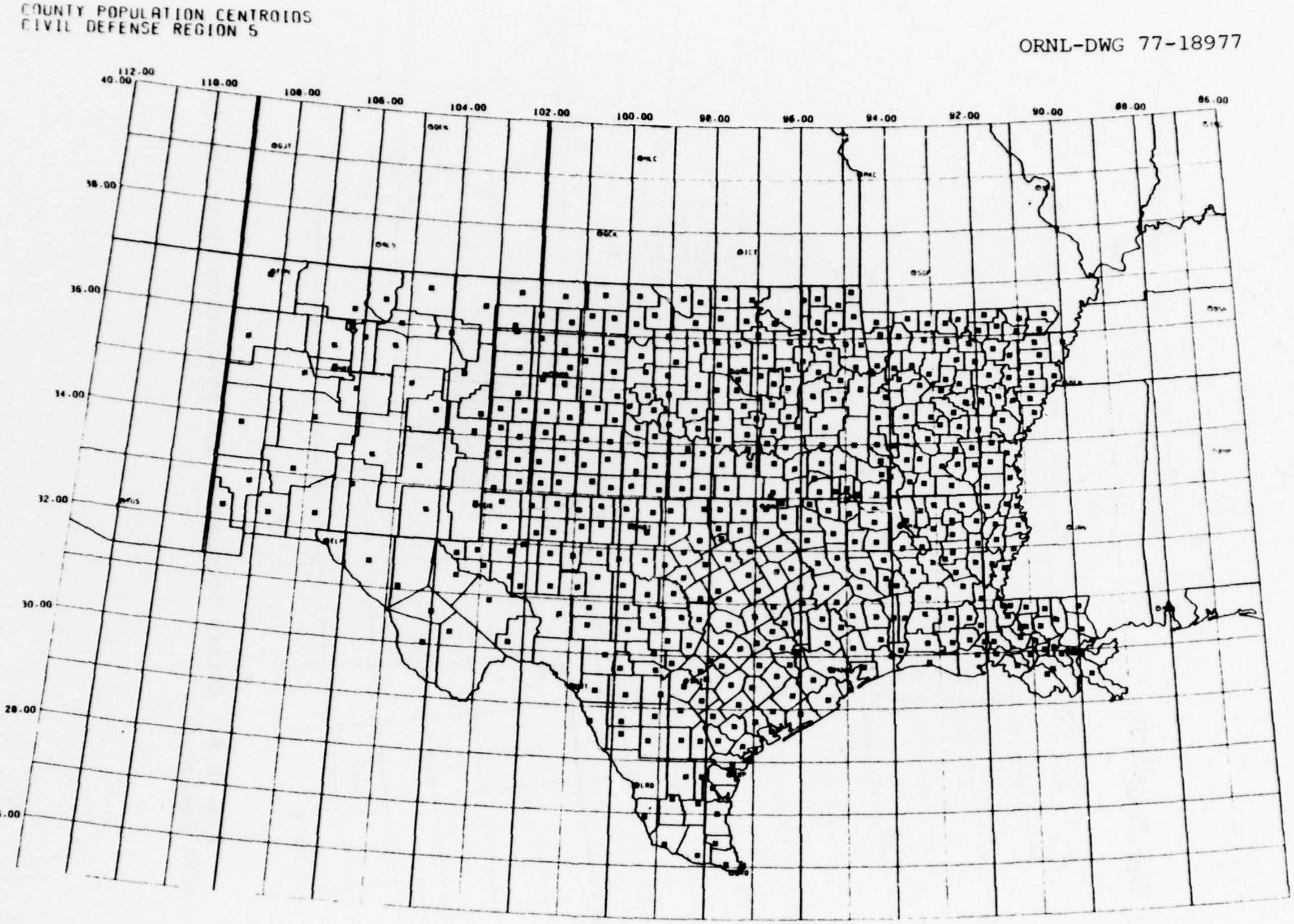

Fig. D.5. County boundaries and population centorids for DCPA Region 5.

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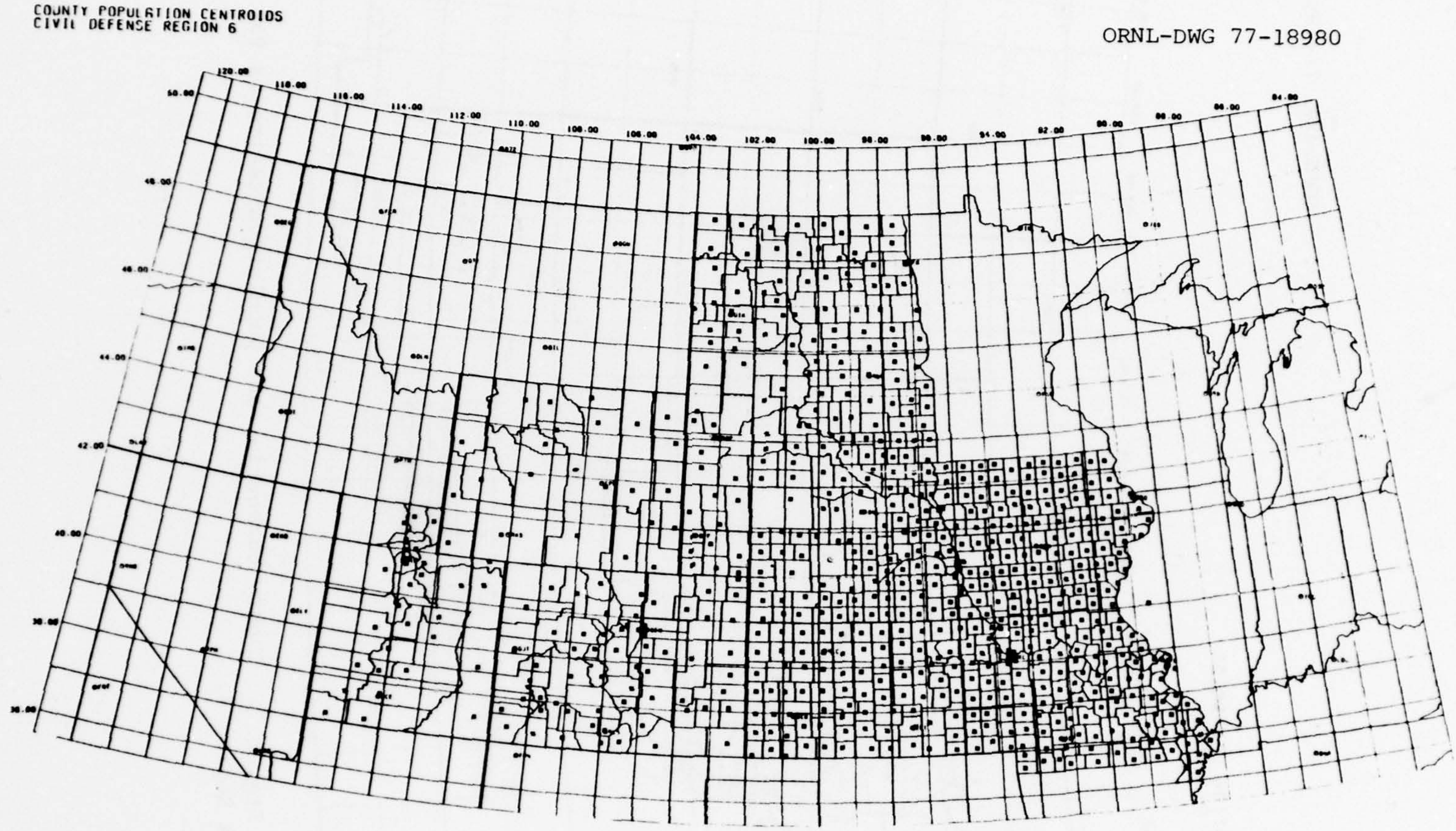

Fig. D.6. County boundaries and population centroids for DCPA Region 6.

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COUNTY POPULATION CENTROIDS
CIVIL DEFENSE REGION 7

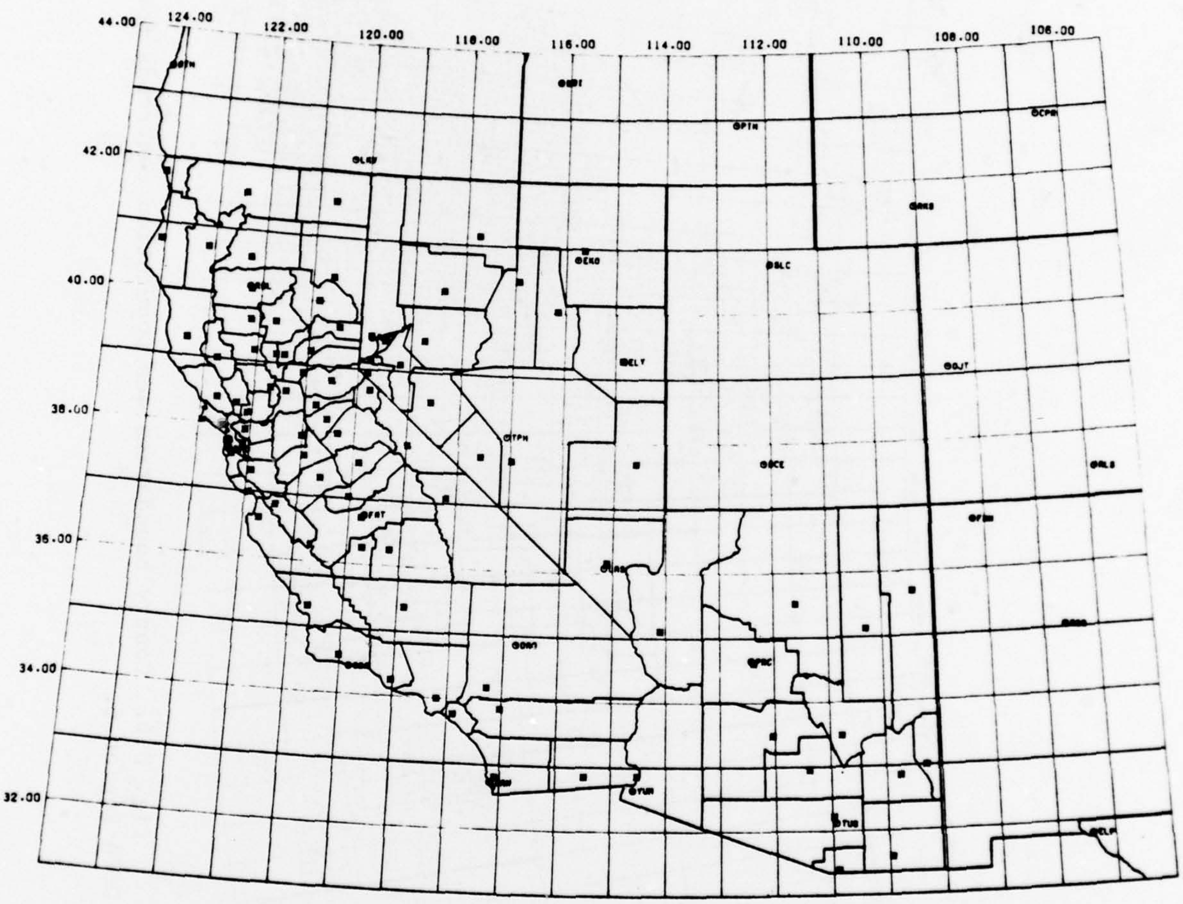

Fig. D.7. County boundaries and population centroids for DCPA Region 7.

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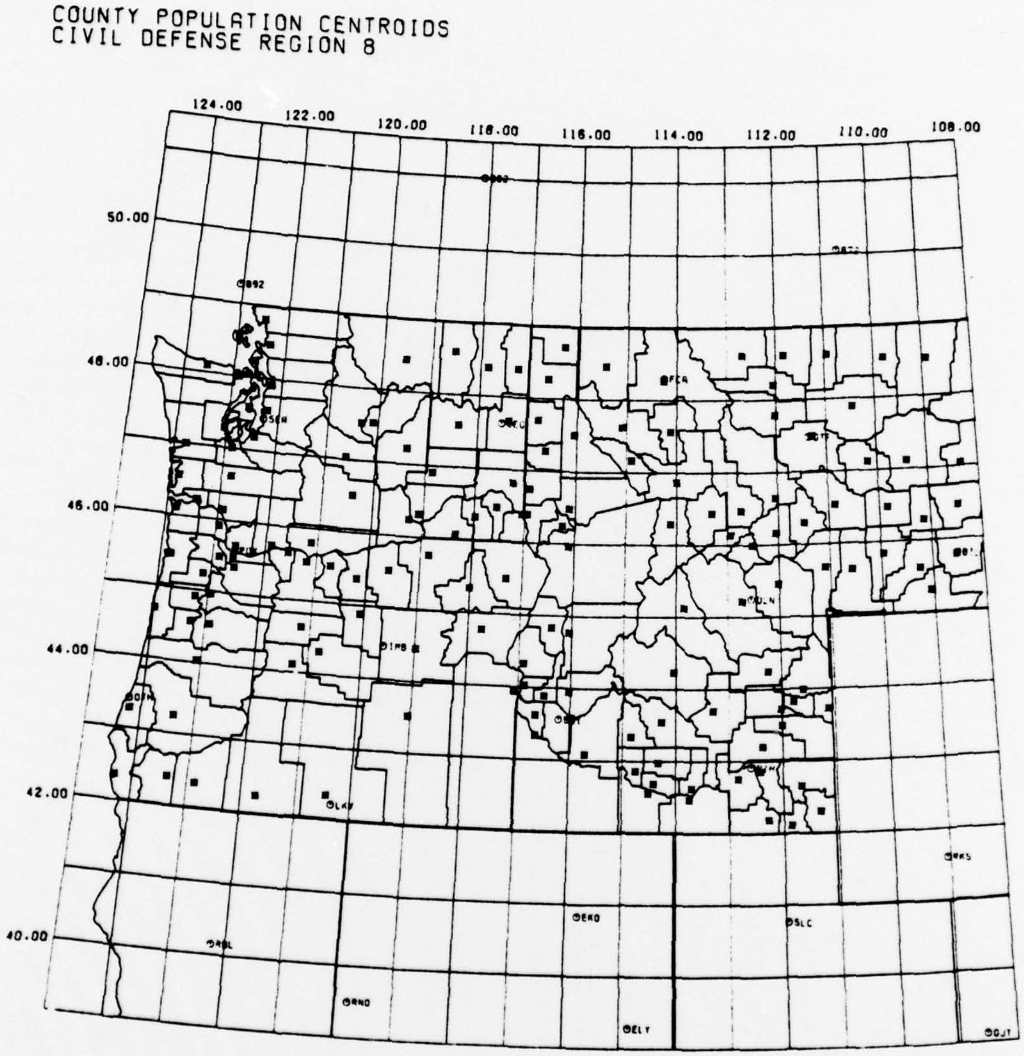

Fig. D.8. County boundaries and population centroids for DCPA Region 8.

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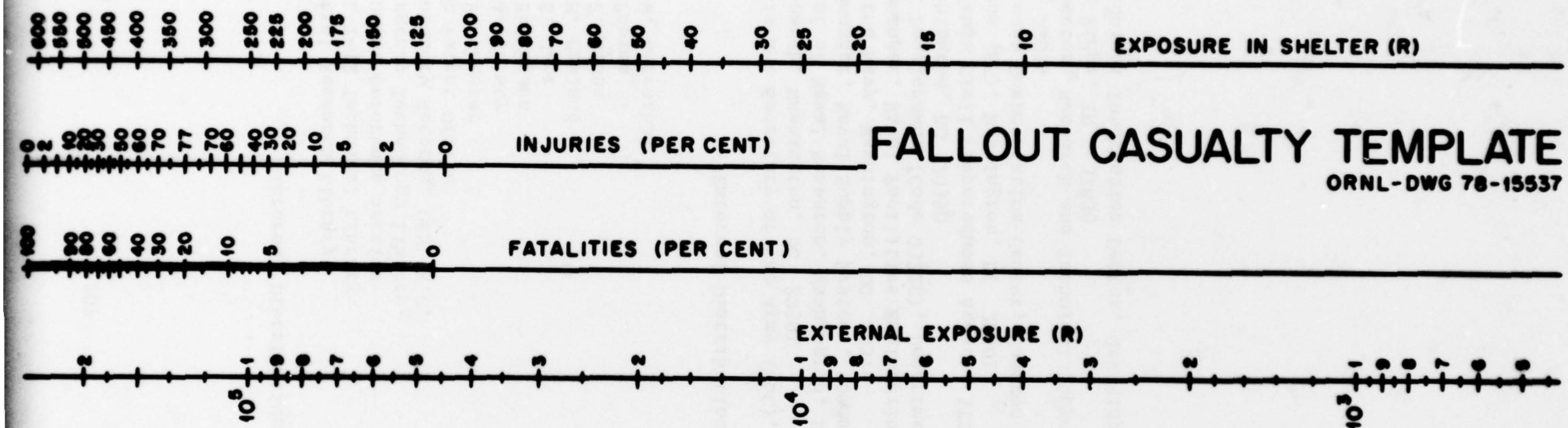

FALLOUT CASUALTY TEMPLATE

ORNL-DWG 78-15537

MANUAL ESTIMATION OF FALLOUT CASUALTIES - Unclassified - OAK RIDGE NATIONAL LABORATORY - August 1978 - 218 pages - Interagency Agreement DOE 40-600-76 and DCPA01-76-C-0373, Work Unit 3539A

ABSTRACT

A non-computer method is given for estimating U.S. nuclear fallout casualties by county. The population is assumed to have taken the best available shelter within a radius of approximately one mile from their place of residence.

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